Reflections on HackteriaLab 2014 Yogyakarta

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Hackteria

Hackteria is a collection of Open Source Biological Art Projects instigated in February 2009 by Andy Gracie, Marc Dusseiller and Yashas Shetty, after several collaborations during the Interactivos Garage Science at Medialab Prado in Madrid. The aim of the project is to develop a rich web resource for people interested in or developing projects that involve DIY bio art, open source software and electronic experimentation.

As a web and community platform, Hackteria tries to encourage scientists, hackers and artists to collaborate and combine their expertise, write critical and theoretical reflections, share simple instructions to work with lifescience technologies and cooperate on the organization of workshops, festival and meetings. Since 2009, Hackteria has conducted workshops in Europe (Switzerland, Slovenia, Norway, Austria, Hungary, Serbia, United Kingdom, Germany) , Asia (India, Indonesia, Taiwan, Hong Kong), Africa (Kenya) and North America (United States of America, Canada).

https://hackteria.org/

Lifepatch

Lifepatch is an independent community-based organization working in creative and appropriate application in the fields of art, science and technology. It is an organization run by multidisciplinary people that reflects the active local creative community and the confluence of academic institutions of higher education in Yogyakarta, Central Java. Lifepatch activities' focuses on educative and artistic approaches towards the communities by developing appropriate creative and innovative technologies, such as biotechnology, digital technology with the spirit of DIY and DIWO culture. Lifepatch mission is to aid the development of local human and natural resources by building a platform that can create a bridges of domestic and international collaboration to give open access to the sources of research and development.

As a member in the Hackteria network, Lifepatch has been the most active node and contributor in citizen-science and artistic works in the art/sci interface, especially with their award-winning microbial fermentation project applied to agriculture and wine-making in Yogyakarta, Indonesia.

https://lifepatch.id/

HackteriaLab 2014 - Yogyakarta

HackteriaLab is an intensive two-week transdisciplinary collaboration between international and local artists, hackers, activists, scientists, and designers, focusing on a number of smaller events, workshops, residencies and exhibitions that prequel the main collaborative lab-phase. In April 2014, HackteriaLab was held in Yogyakarta, Indonesia.

HackteriaLab 2014 - Yogyakarta (HLab14) expanded on ideas and methodologies about BioArt, DIY biology, appropriate technology, art and science, and biohacking, developed during the previous versions of HLab10 - Dock18, HLab11 - Romainmotier both in Switzerland and HLab13 - Bangalore, India.

HLab14 was organized such that participants are tapped into an active, operating situation to minimize time loss in initial research and mappings etc. Collaboration with local communities who have knowledge and experience of the problems in the field, will guide the participants to focus what can be developed during the research lab phase in a directed manner. With the communities as facilitators, we can greatly reduce the needed time in defining the problem. Instead, HackteriaLab participants will be immersed into the multitude of the situations on site. This design of HackteriaLab allows participants to respond with their own practice to the newly encountered situation and to share know-how to develop a process for solutions and realisations. As it may be, the experience may translate to an piece of artwork, a philosophical discourse, a hacked camera or tutorial to cleanse the river water before using it to wash clothes, etc. Connecting to local communities. Indonesia is a part of the world where the role and function of the government in citizen's daily life is non-existing. After 32 years of the 'silent' dictatorship of the new order regime and 15 years of reformation, the idea of democracy and how the state should function has not reach a mutual agreement. Even so, ever since the idea of Indonesia was seeded, there have been many initiatives, both by collectives and individuals, that partially plays the roles of the state —starting from organizing themselves, organizing their family, organizing their surroundings, and it gets bigger and bigger. What we now know as DIY (Do-It-Yourself), DIWO (Do-It-With-Others), open-source and all that are nothing new at all. Being citizens, the Indonesians are used to being busy mending things that the government should have done for their citizens.

Lifepatch is a citizen initiative that works in a creative and effective applications in the fields of art, science and technology. In its activities, Lifepatch's practices focus on the arts and educations in science and technology that are practical and useful for citizens around them. This is done through with the development of creative and innovative practices in technology such as biological technology, environmental technology and digital technology. In practice, Lifepatch enriches the culture emphasizes on the spirit of DIY and DIWO by inviting designated public to be involved, to examine, explore, develop and maximize the function of technology in both the theoretical and practical use to society and culture itself.

#HACKTERIALAB2014

YOGYAKARTA, 13-25 APRIL

13 - 18, 23 - 24 APRIL, 1500 - 2100, OPEN STUDIO/TEMPORARY LAB, KEDAI KEBUN FORUM, TIRTODIPURAN 3

15 APRIL, 0900 - 1600, CITIZEN INITIATIVES IN ART AND SCIENCE SYMPOSIUM
SIMPOSIUM INISIATIF WARGA DALAM SENI DAN SAINS, AUDITORIUM FAKULTAS PERTANIAN UNIVERSITAS GADJAH MADA

19 - 21 APRIL, RETREAT AND WORKSHOPOLOGY, BUMI PEMUDA RAHAYU SUSTAINABILITY CENTER, DLINGO, IMOGIRI

23 APRIL, 1930 - 2200, AKUSTIKOLOGI (PERFORMANCE), PADEPOKAN SENI BAGONG KUSSUDIARDJA, KEMBARAN, KASIHAN, BANTUL

24 APRIL, 1600 - 2000, PROJECT PRESENTATIONS (TALKS), KEDAI KEBUN FORUM, TIRTODIPURAN 3

25 APRIL, 1600 - 1800, #HLAB14 JOG (EXHIBITION), LANGGENG ART FOUNDATION, SURYODININGRATAN 37

SHOW LAST TIL MAY 2

hackteria.org | lifepatch.org | @hackteria | @lifepatch_ | f: lifepatch

Organizer:

Partners:

Supporters:

Schedule of #HLab14

"Making a Laboratory is both a spontaneous activity and a slow labor of love."

20% SCIENCE, 80% ROCK'N'ROLL

Tourdigrade: Tour, Travel and Tardigrade
March - April 2014

During the pre-phase of HackteriaLab 2014 - Yogyakarta "Tourdigrade" connected to the regional partners, going on tour for a series of workshops, hackathons and presentations. On the roadmap were our partners in Surabaya, W.A.F.T. Lab, the Serrum and ruangrupa community in Jakarta, and friends in our networks in Tobucil, Bandung and Jatiwangi Art Factory.

THAT TWO WEEKS IN YOGYAKARTA

#HLab14: Hackteria Temporary Laboratory
@ Kedai Kebum Forum (KKF)
April 13-25

Welcome & Opening (KKF)
April 13

#HLab14: Symposium - Citizen Initiatives in Art and Science
@ Universitas Gadjah Mada (UGM)
April 15

Field trip: Merapi Mountain
April 16
Bioremediation of Volcanic Soil at Merapi Mountain facilitated by Microbiology lab (UGM)

Field trip: Code River
April 16
Environmental Monitoring of the Yogyakarta Rivers facilitated by Lifepatch

Field trip & Camping: Wonosadi Forest
April 16-17
Biodiversity Conservation in Wonosadi Forest facilitated by Green Tech Community

Ground works I (KKF)
Workshops, workshops, workshops

#HLab14: Retreat: Workshopologi
@ Bumi Pemuda Rahayu (BPR)
April 19-21

Ground works II (KKF)
Research, discussions, production

Akustikologi
@ Padepokan Seni Bagong Kussudiardja
April 24

#HLab14: Exhibition - Pameran seni kerja sama
@ Langgeng Art Foundation
April 25 - May 2

THE AFTERMATH

Life is Good, Dude (inofficial trip to the beach)
April 27 - 28

#HLab14: Dissemination Phase
June - Dec 2014

The Solid and Fluid of HackteriaLab 2014 by Andreas Siagian

HackteriaLab 2014 - Yogyakarta was a mix of carefully thought programs and spontaneous initiatives of the participants and organizers. It was conceived from joint ideals between Hackteria and Lifepatch on the question of "What is a Lab?". We have looked in to our previous experiences that our version of a lab is always focusing on the people and on the activities. We have always been taking the challenge of creating a temporary lab in any available and accessible spaces that we can work with.

The ecological nodes
This challenge was our stimulation on creating the frame for the program. Three different environments, which were Merapi mountain, Kali Code river and Wonosadi forest, became the site-specific nodes and framed the program. The reason of this selection was also due to the fact that we had three collectives, which had already been working on those locations; Microbiology UGM was working on the soil remediation of Merapi mountain after it's volcanic eruption in 2010; Lifepatch has been working on the mapping of Kali Code river in the city; Greentech Community has was active on biodiversity conservation of Wonosadi forest.

These three nodes were the main framework of HackteriaLab 2014 - Yogyakarta. We hoped that the participants could engage with the local collectives by working together through their ongoing projects and thus the local groups would be introduced to the other participants in a more practical way. On the other hand all participants could integrate their expertise to share and contribute to the local ongoing projects at the present or in the future. We arranged three field-trips (one for each node) in the early phase of HackteriaLab to enable the participants get into the frame right away.

Introductions
We started HackteriaLab with a casual fast introduction from everyone involved on the first day. It's more of a hang-out-have-a-beer introduction for everyone there.

Symposium @ Universitas Gadjah Mada
The symposium was held in a (slightly) more formal way at Universitas Gadjah Mada (UGM), with a mixture of selected presentations from the organizers, our collaborators, and several representatives of the Indonesian and international participants. The presentation were live-interpreted in both English and Indonesian language.

Temporary Lab @ Kedai Kebun Forum
As the main working space for all of the nodes, we converted Kedai Kebun Forum (KKF) space in to a working lab for everyone. We tried our best to arrange the lab by the area category such as biology, hardware, woodworking, cooking, and even a hangout area. In the end chaos take over and somehow everyone manages to get their own lab to work in that space.

In KKF is where the spontaneous initiatives thrives. Many participants were initiating

spontaneous workshop sessions for anyone who would like to learn on what they are working on. Many workshops were produced as the participants is doing something as part for the final presentation related to the environmental nodes. However the nature of the lab also gives participants the chance to create different topics around their own sets of skills. Most of it were brought up from the working and hangouts session of the participants all together. We also open the lab for at specific hours to allow any audience to step in to visit and interact with the participants. Overall, it created overwhelming and diverse situations, as we had KKF space to be accessible until late in the night. Everyday was full of activities with a mixed combination between work and play.

Retreat @ Bumi Pemuda Rahayu

We took a break for a couple of days in the retreat phase of the program before we the final days of working in KKF. All of us went to Bumi Pemuda Rahayu (BPR) which is remotely located not far outside of the city. This location had very limited access to the internet which allowed participants to connect to each others. At this phase most of the participants engaged in a discussions for the projects they would like to present. While there was also some workshops initiated for the local children.

Exhibition @ Langgeng Art Foundation

The final work presentation was held Langgeng Art Foundation (LAF) gallery just a few hundreds of meters down the street from KKF. We encouraged collaborations between the participants to present it in a form of an exhibition. Again, even if it was framed on the three environmental nodes, many of the presentations were not related to them specifically.

Looking back, 8 years later

Looking back now to Hackterialab 2014, after 8 years, I thought that the three nodes became portals which blended the participants immediately with the locals. Every node had it's own unique experiences and by sharing those experiences, the connections build faster between the participants and the locals. I especially noted that language and cultural barriers already lifted on the last field-trip, which was the forest, where all of the participants stayed over for the night. The works that were created were not a conclusion of the three environmental nodes, but rather a conclusion of the 2 weeks of hang out, geeking, working, sharing, discussing, and may I say living together. It was a cultivation of a lab which was a combination of people and space, work and play, solid and fluid.

HackteriaLab 2014
TOURDIGRADE

lifepatch | Yogyakarta
ruangrupa | Jakarta
Serrum | Jakarta
Tobucil | Bandung
JaF | Jatiwangi
W.A.F.T. Lab | Surabaya

HLab14 Tourdigrade

HLab14 Tourdigrade

<- back to main page of HackteriaLab 2014 - Yogyakarta

To connect to our regional partners, we are going on tour for a series of workshops, hackathons and presenation. On the roadmap is our partners in Surabaya, W.A.F.T. Lab, the Ruangrupa community in Jakarta, and friends in our networks in Tobucil, Bandung and Jatiwangi Art Factory.

See the full details and schedule in Indonesian on Lifepatch wiki

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Poster Publikasi Tourdigrade

JADWAL KEGIATAN

Ruangrupa, Jakarta

Senin, 17 Maret 2014
15.00 – 18.30 WIB Workshop Intro Bio-Elektronika (#WIB)
19.00 – 21.30 WIB Presentasi & Diskusi Hackteria, Lifepatch dan HackteriaLab 2014 (#HLab14)

Selasa, 18 Maret 2014
15.00 – 18.30 WIB Workshop Intensif Bio-Elektronika Banget (#WIBB) – sesi 1
19.00 – 21.00 WIB Workshop Teknik Fermentasi (#WTF)
21.30 – 24.00 WIB Workshop Intensif Bio-Elektronika Banget (#WIBB) – sesi 2

Rabu, 19 Maret 2014
15.00 – 18.30 WIB Workshop Intensif Bio-Elektronika Banget (#WIBB) – sesi 3
19.00 – 20.00 WIB Presentasi final workshop Bio-Elektronika Banget (#WIBB)
21.00 – 24.00 WIB Larry Bang – Bang Tattoo Show Performans

Tobucil, Bandung

Kamis, 20 Maret 2014
19.00 – 21.00 WIB Presentasi & Diskusi Hackteria, Lifepatch dan HackteriaLab 2014 (#HLab14)
21.00 – 24.00 WIB Demonstrasi Bio-Elektronika Praktis (#DBP)

Jatiwangi art Factory, Jatiwangi

Jumat, 21 Maret 2014
19.00 – 21.00 WIB Presentasi & Diskusi Hackteria, Lifepatch dan HackteriaLab 2014 (#HLab14)

Sabtu, 22 Maret 2014
09.00 – 12.00 WIB Workshop Fermentasi Pakan Ternak / Fermentasi Pupuk Organik

Peserta

Adapun para pemberi materi workshop, presentasi dan performans yang akan hadir dalam rangkaian acara ini adalah:

- Marc "Dusjagr" Dusseiller – Hackteria
- Agus "Timbil" Budiarto – Lifepatch
- Budi "Iyok" Prakosa – Lifepatch
- Andreas "Ucok" Siagian – Lifepatch
- Grace Samboh – Hyphen
- Julian "Togar" Abraham
- Larry Bang Bang (Roman Maeder)
- Ferial Afiff - Lifepatch

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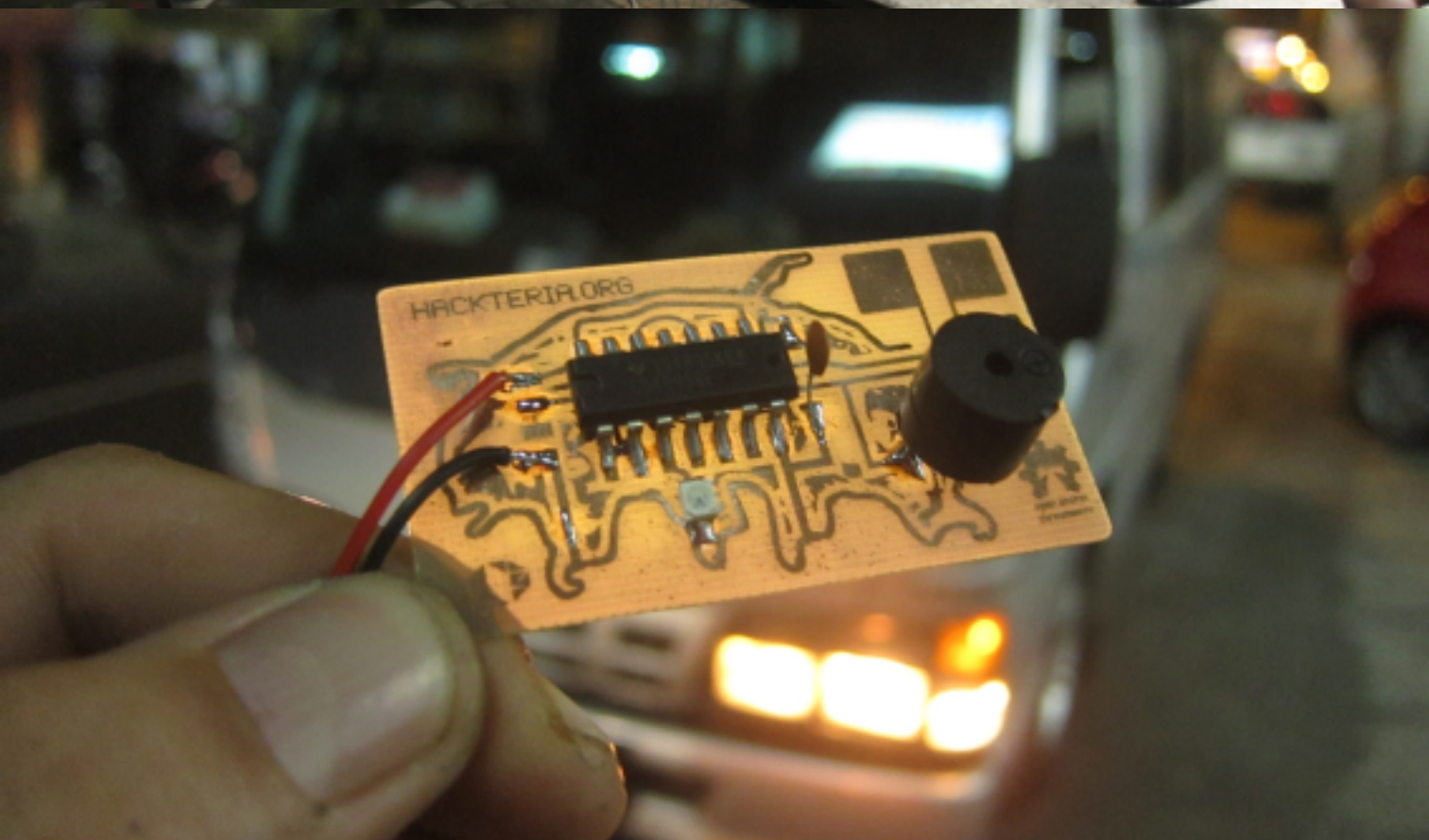
Larry's
TATTOO~SHOW


HACKTERIA.ORG

Hackteria's Bioelextronix by Julian Abraham 'Togar'

Based on my experience with the Hackteria network's activities, Bioelectronix is a collection of modules within the Hackteria framework, which aim to make it easier for artists and scientists to interact with creatures other than humans, especially micro-organisms. They use electronic equipment as a vehicle for communication, downloading or uploading data to be translated into simpler forms, but without ruling out the possibility of producing a more complex result and higher accuracy, depending on the application and its intention. These modules are intended for anyone interested in art and science, beginners or experts.

The modules are usually released after they have been successfully tested in relation to the particular problem. Then they are deliberately given to many people to be used or hacked/ further modified, so that the results are more appropriate to their needs, based on the user's access to parts. It also does not rule out the possibility of communication or collaboration in discussions of interest to the field and movement.

The modules are usually released in the form of tools, not just concepts that apply a particular pattern of thinking to a problem, or recipes that are capable of annulling the problem. Rather they are sometimes a source of problems that must be resolved alone or together. You could say that these modules are very flexible in their creation and use. They don't end at a certain point, where they stand alone as limited instruments. However, many of the modules fulfil the standards of tools and instruments used in scientific laboratories, even surpassing conventional laboratory instruments in price and accessibility. The modules are sometimes alternative tools for assisting beginner scientists, who have limited funding and limited access to scientific instruments that are expensive and only available at certain times.

An example is the microscope made from a webcam—DIY Microscope-Webcam. For me, this was the module with the easiest method for understanding the concept of bioelectronix, and I can say this is the module I used most often. I used it just for looking at the microorganisms around the home at a computer-screen size, but also as the workshop's menu and for presentations about my activities and Hackteria. Easy to use, cheap and portable, and easily reproduced.

It's easy, to use, of course when it has been turned into an instrument. Because every module comes with detailed instructions, the new user can adapt the module quickly. However constructing it does take some effort. The effort is in understanding the working method and the architecture of the tool to be made, and its applications. After that, all the user needs to do is follow instructions as per the existing module, to achieve the desired results.

The DIY Microscope-Webcam is also a simple but effective way to introduce Hackteria, or even the field of biology, to a broader audience.

It is effective, because most scientists don't have wide access to an audience outside of the laboratory, and of course it isn't easy to take a conventional microscope out of the lab and shown to people who are interested in the technology. This tool often impresses and surprises people with its capacity to take human senses into the micro zone; many are surprised by the shift in the web-cam's function, which is usually used as a conventional camera for internet based applications, and impressed because the microscopic objects provide a new perspective of things around us. Micro is a measurement unit that is 1000 times smaller than a millimetre, which is difficult to appreciate through primary human senses.

Through the Bioelectronix modules there have been many forums associated with biology, which have been able to push science in broader directions and restore the perspective that science is everywhere and not only the preserve of a particular elite. These forums attempt to return the perspective that science used to be the result of community work that did not stop at a certain point, forums for easing the process of teaching and forums for scientific innovation and its applications. With an enthusiasm for DIY, sharing knowledge, and a hacking mentality, Hackteria sends a message out to many that science is easy, fun and can be done anywhere, and as science should, gives us deeper understanding of our lives on earth.

Tourdigrade was a series of events in four different cities and in several different communities. It began in Jakarta, Bandung, Jatiwangi and Surabaya, starting with art communities, farmers, biology students and punk music communities with an interest in microbiology. The series of events was intended to introduce Hackteria, its activities, Bioelectronix and also to promote Hackteria's annual event, HackteriaLab2014, in Yogyakarta. Apart from the presentation about HackteriaLab, this session also gives workshops and demonstrates the use of several existing bioelectronix modules. In the hope of increasing interest in this field, workshop participants were expected to come to Yogyakarta to be involved in HackteriaLab2014.

Each session usually began with a presentation about Hackteria, the concept of DIY-biology, biohacking and bioelectronix. This is later continued through the workshop and demonstrations of bioelectronix modules, such as humidity sensors, water turbidity sensors, simple signal amplification sensors, microscopes from webcams, the making of printed circuit boards, through to wine and yoghurt making.

The humidity sensors, water turbidity sensors and simple signal amplification sensors were made from a series of simple electronics, the components of which are easily available in electronic shops in Indonesia. The intention of the workshop was to understand working methods, materials, and ways to communicate living things using electronic circuits, so that the analogue communication methods of these living things are amplified through electronic

signals. This is done to ease the signal reading; even though the signal emitted is analogue, the conversion to digital signals is much easier. This instrument later functions to assist the observation process, for instance a humidity sensor that is applied to an incubator, detecting soil humidity and other things. This was a first step in understanding interactions between biology and electronics from the perspective of Hackteria, or Bioelectronix ala Hackteria.

Hackteria and its modules are an appropriate introduction to teaching science through kinaesthetic practices without worrying about being wrong. It is an experimental space that foregrounds process over the results, the space where freaks and geeks consider theory and implement practice of any kind around science and its applications. And this is what is interesting if we compare it to the conventional institutions where regulations sometimes impede the creative process. This dynamic must continue for the sake of developing science itself, and more widely again the development of ourselves as individuals who live on this earth. Hackteria, with its DIY spirit, knowledge sharing, and concepts that often have a background in deconstruction practices, is a home for individuals with the same spirit.


ART
JAH

Bioelectronix—with an x
by Helmi Hardian

The term Bioelectronix (with the last letter 'x') grabbed my attention after an email discussion with Marc Dusseiler, a friend of Lifepatch, about plans for Tourdigrade in Surabaya. One of the programs was a workshop on bioelectronix, and I immediately turned to the internet to find out what that was. Then Google suggested I try the keyword bioelectronics; I thought, same thing, perhaps bioelectronix is just the modification of the final letter or syllable.

Predictably, the first result was Wikipedia, where it was written that bioelectronics is a new term created for research fields that aim to build synergy between electronics and biology. Sweet! It also made reference to a journal which defined the scope of bioelectronics, describing the key aspects as the interface between biological material and micro or nano electronics.

The last sentence automatically brought up new questions in my mind. Does it have to be micro? Does it have to be nano? I decided to continue my search and nearly all the writing centred on the micro or nano scales, both with regards to the biology and the electronics. Well, it seemed too far and too difficult; I felt I would need to ask for more details when the Hackteria team came to Surabaya.

While I waited for their arrival, I wondered whether the practice of bringing together biology and electronics was already happening or was even already necessary around where I live. Even though the term bioelectronics is still unfamiliar to the ears of people here, we're quite relaxed with the description of the term; in fact the practice of bringing together biology and electronics happens quite often and is usually related to necessities, some examples of which I'll describe:

Famers have created an innovative tool for drying grain, with the assistance of a kind of solar-powered circuit, made by local residents and farmers. Wow, I think that is such a useful application.

Another example is the emergence of a concept which fulfils everyday needs, such as the college students from Muhammadiyah 2 Sidoarjo School who, I read in the local paper, made a tool to assist the elderly to stand up, called the Postwec (power stand-up wheel chair). A project fulfilling more specific needs was conducted by two students from the electronics faculty at ITS, where they designed a tool that functions to stimulate the muscles of stroke sufferers. Meanwhile their colleagues built a machine, called the Electrolarynx, which assists people with no vocal chords to speak.

Do these count as bioelectronics? Perhaps there are those that will agree that it is, and others who will not. However, in the end, my opinion was reinforced when I became aware of the significance of the 'x' at the end of the word bioelectronix, which I had originally thought was insignificant. This explanation emerged spontaneously after I attended the whole series of activities in the HackteriaLab 2014, which

began with the Tourdigrade program.

Tourdigrade-Pre-HackteriaLab 2014, in Surabaya, was a pre-event activity for HackteriaLab 2014 in Jogjakarta in mid-April, which was a series of touring presentations and workshops initially held in Jakarta, Bandung and Jatiwangi. In the Surabaya iteration, Tourdigrades Pre-HackteriaLab held two sessions, the first a presentation at the Tenth November Institute (ITS), in the Biology Department Seminar Room, Mathematics and Natural Sciences Faculty, on Tuesday 1 April 2014, from 13:00-15:30. The second session was a workshop in the multi-purpose building at the Bank Indonesia Library, on Wednesday 2 April, 2014, at 13:00-16:30.

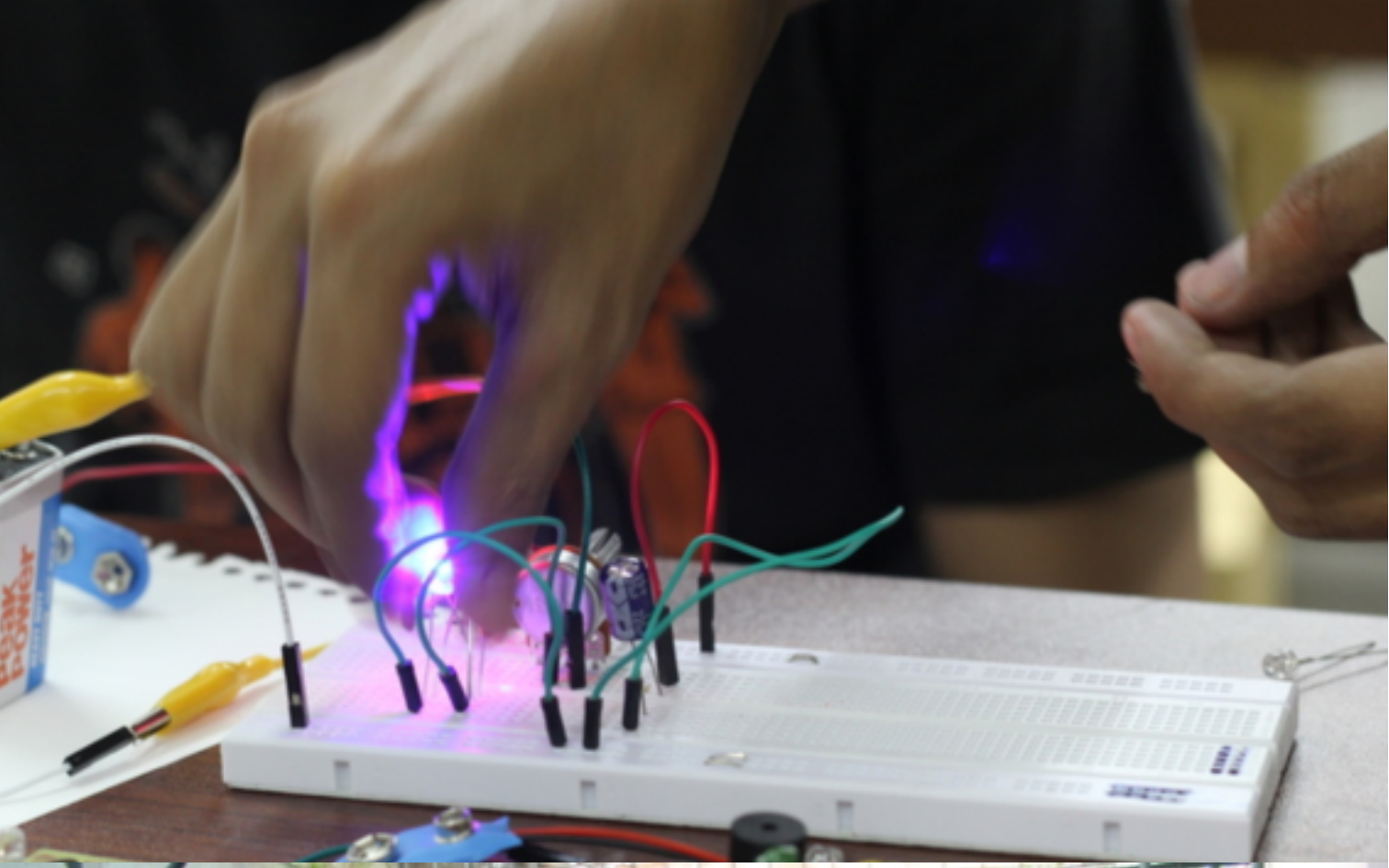
In the presentation session at ITS, the Hackteria team introduced one of the works that they had been developing, a DIY Microscope-Webcam that is cheap but has magnifying power up to 1000x. Students were given the opportunity to try and to understand the working process and the method for making the microscope.

The speakers also related the advantages of this cheap microscope, such as that an image of the magnification appears immediately on the screen of a laptop or projector, and can immediately be captured, easing documentation. At the end of the session students stayed on to ask questions and interact, the Hackteria team also showed examples of other instruments such as the DIY Distillatory, the DIY Turbidity Meter, and other DIY laboratory equipment. The students' enthusiasm was certainly high; from these simple instruments great expectations emerged, such as the dream of having a personal lab in your bedroom. This could overcome many classic problems, such as long queues for lab use, urgent needs for microscopes and most importantly, it spreads the DIY spirit, and means you don't have to give up if you can't afford to buy expensive lab equipment.

Hmm. I began to understand the superiority of bioelectronix with the 'x' at the end.

On the second day the Hackteria team held a workshop that was divided into two classes, and participants could choose which of two they wanted to attend. In the fermentation class, wine-making was explained and implemented using rising agents from the essence of soursop. However, the fruit used in this fermentation process was not grapes, as is commonly used in wine, but rather local fruit like mangosteen and manggo. The speaker explained several important points that are often forgotten, such as cleanliness and sterilisation of all the equipment. Participants were able to take home their produce from the workshop and wait for 2 to 4 weeks for the fermentation process to complete.

Meanwhile, the bioelectronix class was learning about the making of 'sonify life,' a sonification instrument that was created by joining electronic equipment and nature to create synthetic sounds. Visitors were given explanations about components that were



used in the structure, and then they were immediately able to solder and assemble their instrument. Participants were also allowed to develop the structure. Several participants tried to change and add to the components so that a different sound could be produced.

Before the two workshop sessions, the Hackteria team introduced them with a short presentation, explaining several primary matters, such as bioart, biohacking and bioelectronix (ah, this is what I was waiting for). They also explained how it has developed across the world, and the activities and collaborative works that have resulted from the collaboration between Hackteria and Lifepatch, as well as other creative organisations. Here, Marc Dusseiller was the speaker who explained that, in contrast to bioelectronics, bioelectronix is a concept that is more, he used the term 'rock and roll' – in the sense that rock and roll is not just about the music but also the attitude.

Rock and roll music is not just influential on music styles, but also on life, fashion, behaviour and language, and belongs to everybody. The rock and roll analogy is in relation to the principles, concepts and frameworks for bioelectronix, which are not merely innovative, but also relate to attitude, mentality and spirit. Not just in terms of how it is developed, but also how others without scientific backgrounds can become involved and apply it in their broader, everyday lives, where the process and the results can be equally appreciated. So, with that explanation I began to understand what bioelectronix is and how it works. But then a new question arose. How is it actually implemented in the field? That is what made me sure I should join HackteriaLab 2014.

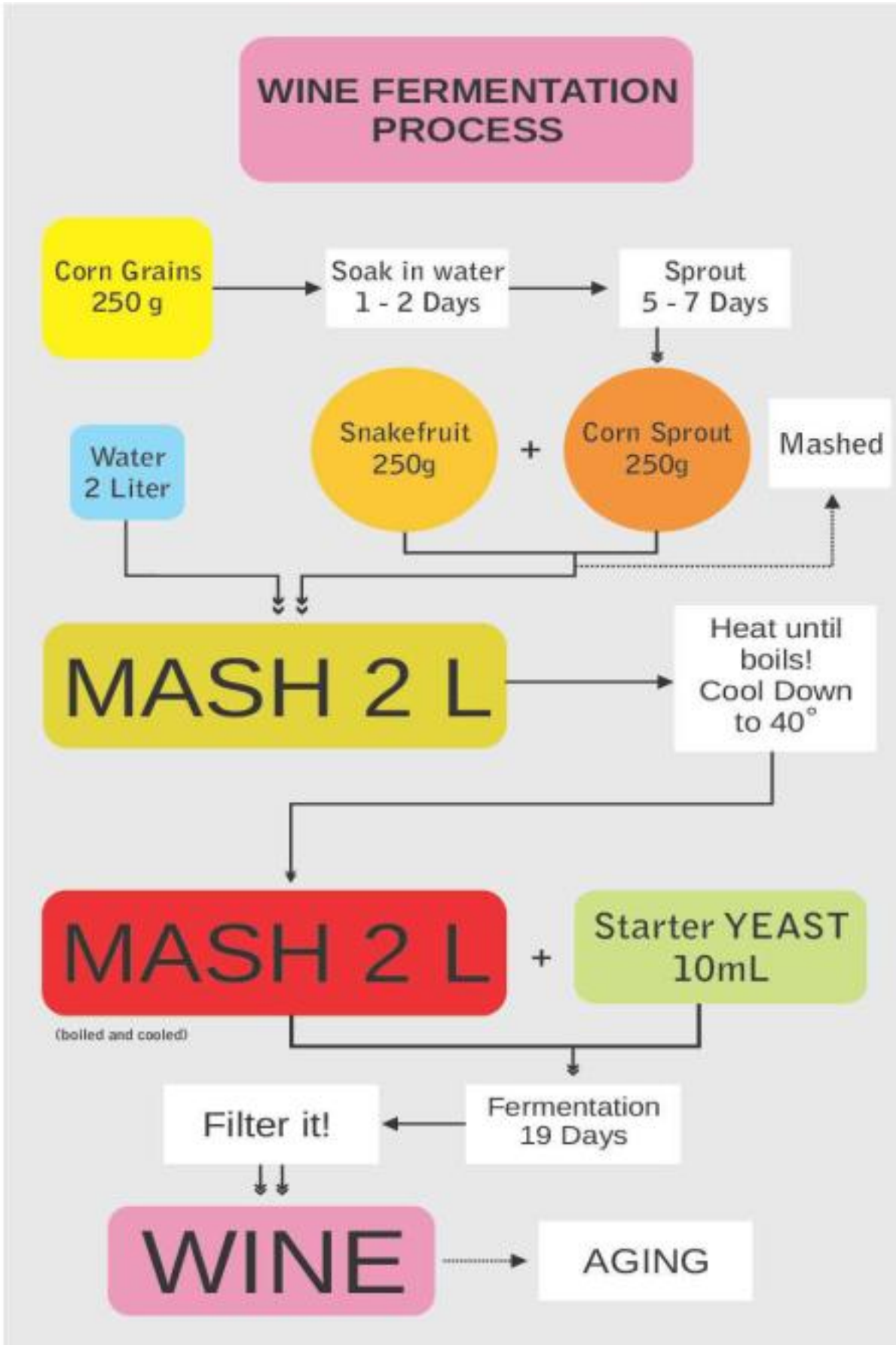
HackteriaLab 2014 was held in Yogyakarta on April 2014. It was a joint project with research, experimentation and discussions amongst scientists, hackers, designers, artists and musicians, both local and international, which was implemented in three sites with different themes, such as bioremediation of volcanic soil on Mt Merapi, observation of the environment around Code River in Yogyakarta, and conservation of biodiversity in the Wonosadi Forest.

HackteriaLab 2014 began with a presentation from each participant, in which I did not feel very confident, given that I don't have even the slightest background in science. On top of this, I was the first speaker; such bad luck. However once the session was underway, the diversity of backgrounds, interests, projects, expressive methods and content of the presentations became obvious. In fact it was this diversity that indirectly meant I could be part of HackteriaLab; an opening capable of breaking down the barriers between disciplines.

Another quite interesting aspect was that no matter what program was taking place, it always began and ended in a kind of temporary lab, and this had the biggest role in interpreting the concept of the Hackteria network, how people gather, ask questions, discuss, experiment and

create without thinking about being right or wrong, successful or not. Here everyone was free to pour out their creativity without limiting segmentations. These are the conditions that made be feel I had a right to be part of the world of science. Unavoidably, science usually feels quite superior, but there we could sense science all around us, even the concept of experimentation would often emerge suddenly, and happen right then, with whoever wanted to be involved.

Program after program took place over two weeks or more, beginning with a symposium, workshop, and an exhibition and so on. I remember that what had brought me into this series of programs was that initial word, bioelectronix with an 'x' on the end. And after joining all the programs, I felt there was even more meaning in the letter 'x'. Not just as an experiment or something we don't know yet, but it reminded me of when I was in school, and the variable 'x' was something always used in tests, as in 'find x', 'determine x', 'what is the value of x?' And we mark an 'x' on the correct box, if our answer is incorrect; we also get an 'x'. So does 'x' mean right or wrong? That isn't the point, what is far more important is that we have tried and found the best answer, at least for ourselves.


WINE FERMENTATION PROCESS
Corn Grains 250 g
Soak in water 1 - 2 Days
Sprout 5 - 7 Days
Water 2 Liter
Snakefruit 250g
+
Corn Sprout 250g
Mashed
MASH 2 L
Heat until boils! Cool Down to 40°
MASH 2 L
(boiled and cooled)
+
Starter YEAST 10mL
Filter it!
Fermentation 19 Days
WINE
AGING

1) In the following process, the corn sprouts are replaced with sucrose (table sugar) and the snakefruits are replaced with pineapples, with volumes increased as necessary.

Sugar 1kg + Pineapple 5kg (cut into small pieces) + Water 20 L = MASH

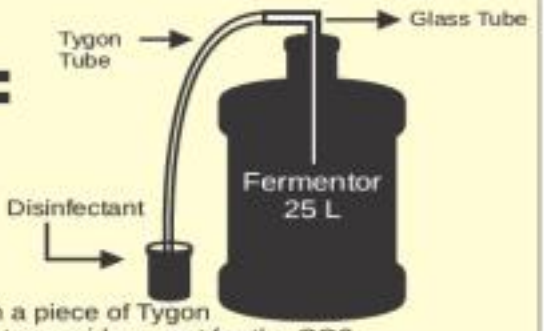
2. This process frees the mash from contaminants
(After boiling, leave to simmer for 15 minutes)

MASH
Contaminant-free and cooled down below 40° C

MASH

3) Cool boiled mash below 40° C
so that the yeast works effectively.
Sterilize fermentor and mix starter yeast in fermentor.

Starter Yeast
(saccharomyces cerevisiae)
25ml



REMEMBER!
Sterility & Hygiene

4) Plug fermentor thoroughly, with a piece of Tygon tubing extended from the stopper to provide a vent for the CO2.
Wait for 6-12 hours until the CO2 bubbles are forming.
Then dip the other end of the tubing in a container of Disinfectant, such as iodine, bleach, etc to prevent contaminants (O2 and other bacteria) from entering the fermentor.

This fermentation process takes 14 - 19 days.

5) After 14-19 days, the fermentation is complete. The wine can be filtered to remove yeast debris and deposited solids. Fining can also be done to remove fruit/mash residue and excessive tannins. Egg white is a quick, easy fining agent.
Mix the egg whites in a pan containing the fermented wine. Let it settle to the bottom of the pan. Then heat at a temperature below 60° C -- use a thermometer to observe the temperature -- until the egg whites boil.
Cool down. The wine is ready to be bottled and ready for consumption.
For the aging process, store bottles in a room at a temperature between 15 - 24° C.
Avoid direct contact with sunlight as it will ruin the flavor.

Keep everything sterile and hygienic for contaminant-free wine fermentation and safe consumption.

DIY Fruit Wine-making
by Nur Akbar Arrofatullah

Wine is often describes as an alcoholic beverage produced through the partial or total fermentation of grapes, but not all wines are made from grapes. In fact, some of the earliest wines were made from honey and berries. Other fruits and plants, such as apple, mangosteen, jackfruit, banana, pineapple, and rice can also be fermented. Fruit winemaking can create delicious wines based on fresh local produce. The winemakers use many of the same techniques used on grape wines.

Fermentation is a vitally important stage in winemaking. The yeast not only convert sugar to alcohol but also produce esters and other compounds, which contribute to the wine's fruit aromas. Extraction of flavor and color from the fruit also occurs during fermentation. Varying the yeast strain as well as the temperature and duration (maceration) of fermentation can enhance the wine's aromatic and flavor characteristics. Commonly used yeast in wine fermentation is Saccharomyces cerevisiae which is referred to as the "true" wine yeast because its alcohol tolerance enables it to ferment up to and beyond 13% alcohol. In an anaerobic environment, yeast metabolize sugars into ethanol through Emden-Meyerhof pathway (Romano AH, and Conway T, 1996). Theoretically, reaction yield of that pathway is 2 mol ethanol for every mol of glucose, but in the actual fermentation process the ethanol yield is not more than 90-95% of the theoretical yield. That is because some of the nutrition were used in yeast reproduction, for the synthesis of new cell biomass and also to support the other step in yeast metabolism process.

In order to make a good fruit wine, the fermentation mix should be adjusted in one or more respect because only few foods other than grapes have the balanced quantities of sugar, acid, tannin, nutritive salts for yeast feeding and water to naturally produce a stable, drinkable wine. In the fruit wine fermentation process (Figure 1), the first step is extracting the fruit juice which contain sugars that will be use as the carbon source for yeast. Our method for fruit juice extraction is by cutting the fruit into small pieces and boiling it for about 30 minutes at 100 degrees Celcius, the boiling process will also sterilize the juice from indigenous bacteria and fungi which could possibly cause contamination in the fermentation process. To to make the fruit wine palatable and to increase the alcoholic content, sugar or honey can be added in the fermentation mix (MASH). After boiling, the MASH liquid then poured into the fermentor through fine sieve while it still hot. After the it cools down at about 40 degrees Celcius, the dry yeast/wine starter then added to the solution and the fementor were sealed with airlock. The CO_2 bubbles will start to appear within 1-2 week after yeast addition/ inoculation and after 2 -3 month of fermentation (minimum), the fruit wine can be harvested and bottled.

Potted Time
by Pei-Wen Liu aka pei

In this modernity, trained artists locked themselves up in referential chains of social networks to construct an exposure for the next act. The foundation of selected materials for these artists whether are pigments or mixed medium do not escape from the market's expectation of value exchange. That is, to a materialistic approve, the value of art is external, the beauty of romanticism never die, art do not decay, art last ever and forever. Comma, speaking of the constraints of chosen materials for the art world is nowadays the new dialectics of research-based-art programs throughout art universities around the world, by re-calibrating the outlet of contemporary art education to a non-market driven specifics, librating the existing debates from instrumentalism to field of experiences.

Fermentation on the other hand, a field of praxis alives in many cultures as the traces to our instinct of survival and self-repairing, of how to transform simple ingredient to a complex yet intricate flavours and functions that passes on thousands of years. The byproducts of fermentation merge to senses of the natural itself, which often brings comforts. Natto, Stinking Tofu, Soy Sauce, Fish Sauce, Wine, numerous types of pickles are all made of extremely simple and basic components to maintain its intricacy of cohesion.

Most of Asian communities use soy bean based fermentation and fish sauce on daily basis. KIMCHI (pickles) fridge is a common Korean kitchen instrument, every family's very own incubator of Lactobacillus for different types of kimchi. I, Taiwanese, grow up in the culture of north-east Asia, influenced by Chinese, Japanese, Korean and as well as some legacy from Austronesia. My life in Asian urban jungle before residing in Europe was never lack of fermented food, and never I questioned the "why" are there so many fermented food around me. Perhaps the process and the concept of fermentations were all too well hidden behind the labeled bottle or colourful packaging. Once the milieu around me has changed, I moved from semi-tropic island to Heidi land, where milk and honey flow instead of conserved but warm sea air.

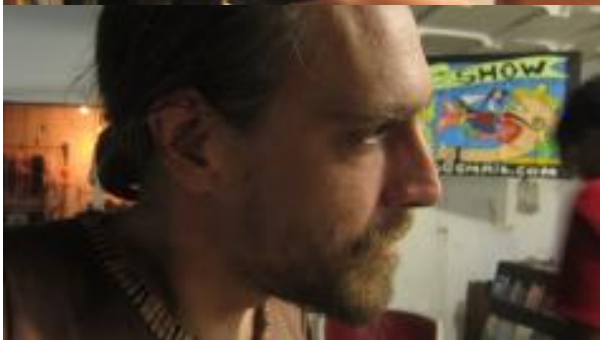
Today, the ocean inside of me is interlocked by cowbells on meadows. I missed something very much I do not quite understand. Of course I tried to browse through those bottles and packaged foods ship from Asia. These do not ease the warm wind inside of me. I began to experiment with homemade KIMCHI, hands on to the interplay of time and temperature, prepare the ground for some bacteria to do the work, allow good bacteria (that we human like their work) to reveal the taste of active being, by reconnecting the environment and the time spent with these basic elements in my hand. But not without failures and explosions. I make Kimchi. The time it needs to develop into a fine state is the time I lost at the past, yet forgotten.







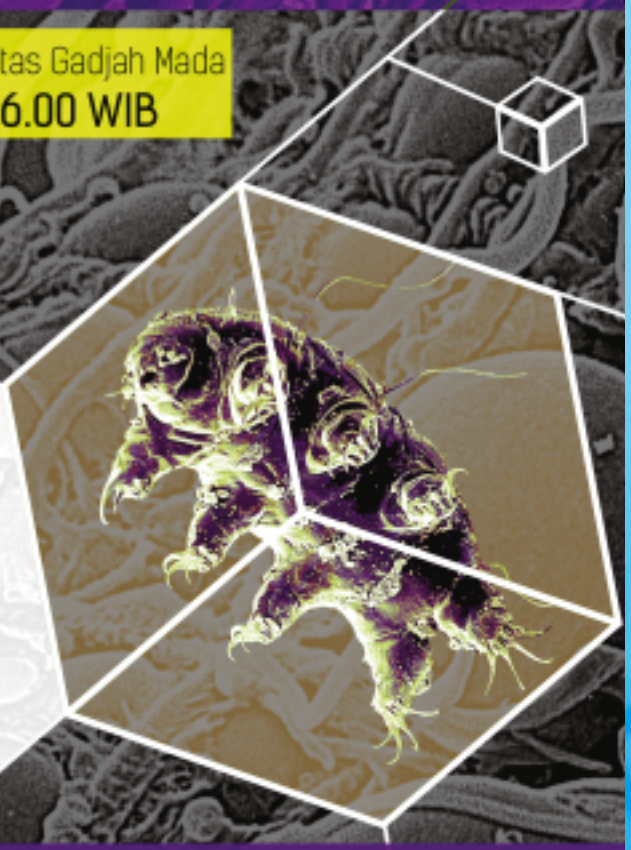





#HACKTERIALAB2014 – Simposium

INISIATIF WARGA DALAM SENI DAN SAINS
seniman, pembuat, ilmuwan, peretas, apapun

Auditorium Fakultas Pertanian, Universitas Gadjah Mada
Selasa, 15 April 2014, 09.00–16.00 WIB
Gratis dan terbuka untuk umum



Prof. Dr. Irfan Dwidya Prijambada (ID)
Dr. Marc Dusseiller (CH)
Andreas Siagian (ID)
Agus Tri Budiarto (ID)
Iskandar Waworuntu (ID)
Yashas Shetty (IN)
Dr. Matt Baker (NZ/AU/GB)
Ismal Muntaha (ID)
Fajar Abadi (ID)
Martin Malthe Borch (DK)
Wahyu Sigit RHD (ID)

Bawa *earphone dan gadget* apabila Anda butuh terjemahan langsung!

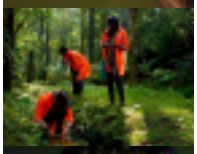
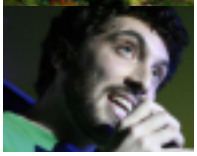
Jurusan Mikrobiologi, Fakultas Pertanian Universitas Gadjah Mada
Hackteria | Open Source Biological Art
LIFEPATCH – citizen initiative in art, science and technology
Bumi Langit Institute
ARTscience BLR, Srishti School of Art, Design and Technology
Victor Chang Cardiac Research Institute
Jatiwangi art Factory
Biologigaragen – an open space for citizen science in biology
Indonesia Dragonfly Society

Organizer:

Partners:

Supporters:

Symposium - Citizen Initiatives in Art & Science artists, makers, scientist, hackers, whatever

	Arrival Registration	Registrasi	
	Welcome words	Sambutan	Dr. Jamhari (Dekan Fak. Pertanian UGM) Dr. M. Saifur Rohman (Sekjur. Mikrobiologi, Fak. Pertanian UGM) Walker-Nederkoorn (Swiss Ambassador)
	Introduction of HackteriaLab 2014 - Yogyakarta	Perkenalan HackteriaLab 2014 – Yogyakarta	Dr. Marc Dusseiller (Hackteria) Andreas Siagian & Agus Tri Budiarto (Lifepatch) Prof. Dr. Ir. Irfan Dwidya Prijambada, M.Eng. (Mikrobiologi, UGM)
	Citizen Science: Ecology and Sustainability	Sains Warga: Ekologi dan Keberlanjutan	Iskandar Waworuntu (Bumi Langit Institute) (ID)
	Art and Science Approaches in Bangalore, India	Pendekatan Seni dan Sains di Bangalore, India	Yashas Shetty (IN)
	Nanoscale Molecular Machines (and Science Rapping)	Mesin Molekular Berskala Nano (dan Sains Rap)	Dr. Matt Baker (Victor Chang Cardiac Research Institute, Australia) (NZ/AUS/GB)
	Art and the Crowd: Community, Citizen or Public?	Seni dan Orang Banyak: Seni Komunitas, Warga, atau Publik?	Jatiwangi art Factory dan Fajar Abadi (ID)
	Biohacking, Art & Citizen Science in a Danish perspective	Gerakan para Pembuat/ Peretas (Maker/Hacker) dan Sains Warga	Malthe Borch (DK)
	Citizen science and Biodiversity	Sains Warga: Biodiversitas	Indonesia Dragonfly Society
	Coffee/Tea & Discussions	Teh, kopi, dan diskusi	

An insight from us, the university by Irfan Dwidya Prijambada

Good morning, assalamu'alaikum warahmatullahi wabakarakatuh, and best wishes. I express my thanks to the organisers of the Citizens Initiative in Art and Science Symposium–for which I have the honour of making introductions–for your cooperation which has yet to be, or may never be, very common: The cooperation between art and science.

This unusual cooperation between us–myself, our colleagues, staff and students in the Agricultural Microbiology Department, Faculty of Agriculture, Gadjah Mada University– who are engaged in scientific fields, with colleagues active in the field of art, began with my faith that science and art and science are of the same lineage: admiration for God the Almighty Creator. The difference between scientists and artists emerged because of the cultivation that followed. In their appreciation for God the Almighty Creator, scientists were raised by a strict and disciplinarian father. When the scientists wanted to express their appreciation for the red hues of a flower, the father would ask why it was red, what was the chemical structure that made the red hue, how much was detectable in every kilogram of flowers, so on.

On the other hand, the artists were raised by a father who was very patient and understanding, a kind of Mr Tino Sidin who often taught the discipline of painting when I was a child. When artists wanted to express their appreciation for the colour red in a flower, with expressive words such as "The red blooms like blood," even though the red of the flower is not like blood, and the flower has yet to bloom, the patient father, full of understanding, still gave praise, "Good, very good...." The same thing occured if artists want to express their appreciation for an elephant or a dove, and do this in the form of a flying elephant with the peaceful face of a dove.

Even though there are huge differences between the two, scientists and artists have an important similarity; they must both be creative. When we first concieved of this scientist-artist collaboration, as an experimental researcher I couldn't imagine the resuts we would achieve, but I had faith that there would be a benefit from the meeting of these two creative sides.

The concept of cooperation of between scientists and artists appeared in my mind and was realised in 2007 after several artists who had joined together in the House of Natural Fiber (HONF) group, Yogyakarta, visited the Agricultural Microbiology Laboratory, Faculty of Agriculture, Gadjah Mada University, for a discussion on biology. Honestly, even I was confused by their questions and interpretations, which were completely outside of my expectations. These meetings between scientistis and artists became more common with overseas artists visiting HONF. In 2009, Marc Dusseiller, the chair of the Hackteria (hackteria.org) an open-source organisation which has its headquarters in Switzerland and is hosting an art project which focuses on biology, introduced webcam to be hacked as cameras to students in the Agricultural Microbiology Department, Faculty of Agriculture, Gadjah

Mada University. The benefits to the students, who always have difficulty with microscopic observations because of the limited number of microscopes, attracted more students to join this scientist-artist collaboration.

Their enthusiasm rose when in 2011 the collaboration received the The Transmediale Award di Jerman award for an installation, which was titled "Intelligent Bacteria – Saccharomyces cerevisiae" and displayed an orchestra of sounds made by gases produced by Saccharomyces cerevisiae yeast during its fermentation process. In 2011 the colllaboration continued with a biological art installation titled "The Merapi Terraforming Project: Bringing Life and Art back to a Volcanic Disaster Zone" which utilised nitrogen fastened rhizobacteria to support the initial life stages of leguminosa plants in land crops covered by material from the Mt Merapi eruption. The leguminosa were planted by students from PERMAHAMI (Microbiology Students Association) Faculty of Agriculture, Gadjah Mada University, in an architectural building designed by students from the Architecture Department, Technical Faculty, Gadjah Mada University. The art installations that involved the community around the eruption location on Mt Merapi opened up a range of social opportunities through the pioneering cooperation of scientists and artists.

The social relationships that emerged from the scientist-artists cooperation was later motivated by students who joined PERMAHAMI and the artists group Lifepatch, which was a new form for HONF activists, becoming even more popular when they worked together on the .Lifepatch The Lifepatch-PERMAHAMI collaboration then resulted in BioArtnergy, an exhibition of installation art related to bioenergy that was held at the Jogja National Museum in 2012. Bioartnergy 2012 broadened the collaborative network of scientists and artists because it gained support from several student associastion in the Faculty of Agriculture, Gadjah Mada University, such as Imagro from the Plant Cultivation Department, KMSEP from the Socio-Economic Department, and IMHPT from the Plant Protection Department, as well as several other artist groups such as OtakAtik Creative Workshop, Pilar and Friends and Bright Idea. BioArtnergy 2012 was then followed by BioArtnergy#02 yang diselenggarakan pada tahun 2013 and gained even broader support from KMIP from the Fisheries Department, Faculty of Agriculture, UGM, Archaea (Microbiology Students Association of ITB) and Nano World Indonesia (student association for Indonesian nano-technologists) from the sciences, and from the arts; Bumi Theatre, Sanggar Simpay, Arsci, and Galih and Febfi – individual artists from the visual arts department at the Indonesian Arts Institute.

I hope that this cooperation between scientists and artists continues to sharpen our creativity and bring even greater benefits to the community. Enjoy the symposium. Wassalamu"alaikum warahmatullahi wabarakatuh.

Welcome Words by Heinz Walker-Nederkoorn, Swiss Ambassador to Indonesia

"Assalamu alaikum, Pak Dr. Jamhari, Pak Dr. Irfan, Pak Donnie, Pak Andreas, Pak Dr. Marc, Pabak-Pabak, ibu-ibu, yang terhormat. Saya inging mengucapkan terima kasih atas kesempatan ini bertemu anda. Saya senang sekali bisa kembali ke Jogja dan ke UGM. Permissi, saya sekarang bicara inggris.

Ladies and Gentlemen, when I first read the title of today's Symposium "HackteriaLab 2014", I asked myself: "What the heck is HackteriaLab 2014 Symposium?

Well, as a diplomat, I'm dealing every day with our globalised world in general, and here in Indonesia, with the relation between Indonesia and Switzerland, in particular. So, at whatever function or event, I participate, I try to establish a link to globalisation and to our bilateral relation respectively.

Let me start with the link to globalisation. What are main characteristics of globalisation?

- First: there was never ever in the history of mankind such a high degree of interlinkages and interconnections, between people, countries, economies, cultures, scientists, infrastructure, you name it.

- Second: Our societes, economies, research and cultures are very much based on a high degree of specialisation. An obvious result of this specialisation is a tremendous progress of knowledge in all these areas. Take the huge progress of knowledge made in biotechnology in the last three decades as an example.

- Third: As a result of increased interdependance and high specialisation, the globalised world becomes more complex every day, and as an individual person you can forget about understanding all aspects of this progress.

- Fourth: Against this background, cross border knowledge sharing becomes more important.

Now, what is the link between main characteristics of globalisation and the "HackteriaLab2014 Symposium"?
I think, this Symposium will shed some light on some interlinkages by bringing together specialists (citizen-scientists, artists, engineers, professors, students, even diplomats) sharing their knowledge and engaging together in a democratic Do-it-yourself process without knowing the outcome. Ladies and Gentlemen, the "HackteriaLab2014 Symposium" will also contribute to nurture and further the relations between Indonesia and Switzerland. It brings together people from Jogja with people from Switzerland engaging together in a fascinating project.

I would like to take this opportunity to thank Universitas Gadja Mada - I would say the flagship University in Indonesia - for hosting the Symposium, and the teams of Hackteria, lifepatch and the Faculty of Agriculture for organising this innovative event.

Thank you for your attention and enjoy the Symposium!"

Spiritualism and permaculture as living practice by Iskandar Waworuntu

I was invited to the context of enriching the discourse related with the symposium organized. My background is quite wide, but what is more relevant to share now is how I have become a self-taught environmental practitioner and the ways I have learned by myself how to appreciate and be closer to the nature. With reaching the age of 60, I have obtained a more spiritual perspective towards life, therefore when I was invited to join this discussion of working together with art and science, my first impression was of something that is extraordinary, as long as we see this combination from a holistic point of view, as something that is comprehensive.

As we all know, in art and science human interests and their activities are very fragmented. The loss of both will mean the loss of humanity, the contact with life itself. Formal education in the world is fragmented and is threatened to lose the potential of those inside to see the live in a holistic view. In the last seven years I have lived in Yogyakarta, in Imogiri area where I have tried to create a place to make something that is needed. Within my passion for farming in the last 30 years, I have been trying to be an organic farmer. And I have noticed that becoming an organic farmer is just an element out of many, on how to approach life.

My question and my purpose are then: How can I become a 'holistic', noble organic farmer? One that chooses wisdom in his practice. This type of choice was previously taken by the farmers from past times, but because of the on-growing importance of money and industry, this focus has been faded and gone from their practices. We have to be aware that not only farmers, but all the production processes in our lives have to be alarmed and bring into attention a more noble interest.

I try to approach a holistic, divine perspective in permaculture—which most of you probably have already heard about. Permaculture can be a very interesting approach to life because it puts us, humans, to be designers for the space around us. Permaculture is a technique of giving responsibility to humans in designing something by considering all the elements of nature to be a part of the design. Whether the space is 100 meters square or 1000 is irrelevant, because the idea is to create the best environment that we can benefit from. The objective is then to have a physically intense involvement at the beginning in order to build it, an effort that will be seen in time when we will get the visible results without having to bring a big input anymore.

To put it simply, permaculture is a discipline that allows you to be creative in keeping the beauty and balance of the earth and the sky, of life in general. Permaculture is also a good way to maintain the relationship between us—humans—and the nature by its principles of preserving and enhancing. For me, there are three main points in this discipline: Good and wise planning; Careful use of natural resources; Ethical approach in respecting all kinds of life—the living.

The biggest problem that we have as humans nowadays is being exposed to the infinite products and to reduce the consumption of things we need in life. We are encouraged to be excessive, both for finding resources and making sure that we will produce more things than we need. That's the nature of industry. And that's what I try to implement in my place in Imogiri, Yogyakarta – finding an answer to these problems.

I am invested into practicing change from the consumptive life that we are constantly faced with now into a creative life. How can we make use of the waste and convert it into a new resource for other lifes? How do we humans reconnect with humanity and nature at the same time?

The genesis of art and science practices in Bangalore, India
by Yashas Shetty

I believe that Mahatma Gandhi is India's most famous hacker. Why? Because when the Minister of Manchester threw away our cloth, he started spinning this wheel (and kept on doing it for quite some time). This then becomes a kind of symbol of resistance and, later on, throughout generations, the act is believed as his teaching for people to achieve self-sufficiency and independence. Charkha (the spinning wheel) is also used as a symbol of the Indian independence movement. And, by the way, he is also one of India's first performance artist by that act. To me, he is a kind of inspiration.

Bangalore is home for all the research and technology institutes in India, especially in aerospace and computer industries. One of the first research institutes that were set in 1889 made Bangalore a high-tech industry city. The history of Bangalore is therefore related with the work that we do. It is also strongly connected with the institutions that we collaborate with.

There was a large pool of engineers and scientists in Bangalore who basically didn't have anything to do until the middle of the 1980s. When the Americans came, they were very surprised to find this condition and quickly decided to give them jobs of making chips and software. Because of that, we now have buildings like Infosys campus, representing modern Bangalore.

I teach in the "Srishti School of Art, Design and Technology" that has about 500 students. This school is interesting for me because its philosophy is based on something that comes out of Europe 'constructivism' and 'constructionism'—philosophical theories that construct mental models of knowledge based on experience for building and creating things.

Next to my campus there is the National Center for Biological Studies. It is an institution that looks at fundamental research into biology, life sciences and anything from theoretical biology to stem cells. At some point, they introduce us to their wet labs by inviting art students to use them and do whatever they want. At first, we didn't know what we should do in such labs, so the first thing was to collaborate with a synthetic biologist named Dr. Mukund Thattai. Synthetic biology is a practice field of biology that kind of uses engineering paradigms and metaphors from engineering which could become problematic. Basically you look at life as a machine, then life becomes kind of a living machine.

What makes my campus interesting is that kind of cross between disciplines. The group that I run is build up of only a few people and started off in 2009 as an IGEM (International Genetic Machine) team. When we participated in IGEM competition, the students involved had to create these parts, as Lego pieces, by putting the DNA bits together and create knowledge from the organisms that produce things for you, like proteins and whatever.

Our first project was Teenage Gene Poems (2009). We wanted to see if we could create a kind of Bollywood bacteria. We began with the smell of rain that is symbolic to the ritual of universe in India (monsoon, rain, etc). It turned out that there is this streptococcal bacteria that produce a type protein called Geosmin that produces the enzyme that smells like rain. This is actually what we call our artwork, a sequence of genes, DNA that produces the enzyme. It is open source, so you can go the Parts Registry and download it, injected it into your bacteria and you can have the smell of rain in your house.

When we started working with synthetic biology, we were more interested in the aesthetics of it and less on the ethical aspect. The findings are philosophically interesting for us. When we had to present our work to scientists in MIT, they were critical regarding our work in terms of lab use ethics—as we are amateurs. We believe that we could actually change the world using synthetic biology. But, then in our next projects we tried to look more at the ethical impact of our work in terms of the equipment use and the interactions with our scientists' collaborators. While we were doing these experiments in the lab, we realized that we have to fight for lab time. Because of our interactions with Dr. Marc Dusseiler, we learnt how to build our own lab equipment. After this, we went a step further and built autonomous public labs, envisioned as people's research lab where anyone can be a scientist in the lab.

We then decided that we are not going to work with these high-tech approaches, but rather using a more low-tech, DIY approach. We started working with farmers across India looking at the diversity of microbes in the soil that is being reduced by the pesticide people use. We started with extracting the DNA from the soil and we though it would be interesting to look at this extraction process as a performative act.

Other than us, there are some other citizen science practices in Bangalore, such as Season Watch (allows people to upload weather changes so that they help in documenting potential changes in phenology and to provide a kind of warning if things are not going so well); Migrant Watch (invites citizen to observe the migration of birds so that they can relate it the weather change); and Gubbilabs (ecology mappings through the observation of ants, frogs and toads' life).

European DIY-bio scene by Martin Borch aka Malthe

I'm an IT part-time researcher at the Copenhagen University. In the other half of my time, I am freelancing in DIY-bio movements in hacking biology, setting up bio hacking spaces and mixing art, science, DIY biology and design. I've started looking into alternative ways of communicating science because of my previous frustrations with the universities and other departments I was working in.

I associate learning science with the same way in which you learn how to play football, in social, passion driven clubs open to everyone, regardless of your occupation. In this way, everyone working in the field should be able to go inside it and from their own perspective to have fun with the science and biology. The next question that I put to myself is: What if the strong associations and cooperative-society-oriented culture in Denmark can be a framework for high-tech creative and collaborative innovation? This represents the last step to see the direction in which I am going.

Hackers and Makers

But how do we start this at all? In our hacker space we have created some guidelines, and we don't like to call them rules, because we don't have any, except Rule 0: "Don't act in a way that requires us to create a new rule". Basically, be there and know what other people think about what you doing, so the interaction and communication will come by itself.
One of our guidelines in the hacker community is this "DO'ocracy" in order to illustrate that in this hacker space that I am a part of, if you can do anything is less than 2 minutes, you can do it immediately without asking anyone. If you would like to do something, and you think is worth taken into consideration, you can post it on everyone's mailing list or on Facebook, and if nobody comments on it in 48 hours, you can do it. If someone objects or has comments to it, the idea is taken into a meeting, settled every second week. that's the hacker mentality.

DIY bio

In 2010, after I participated in iGEM (International Genetically Engineered Machine) competition, the same year with being in Arts Science Bangalore, combined with my frustrations on science pulled me into building my own laboratory and see how to play around with the science by starting with creating centrifuges and other lab tools, developing more and more creations.

We have also created a DNA copy machine. Anyone can come in this bio hacker space and examine whether there is a horse is your lasagna, whether you have the problem with labeling the food you are eating, and you can even test if your parents are indeed your parents, or various diseases.

When the DIY bio movement start asking these questions and allowing these tools to be available, it starts to sets up some ethical questions. One of our early meet-ups was in London, 2010, to set up the draft of the DIY bio code of ethics.

What is unique in being in these spaces is the fact that you are faced with the responsibility of your own curiosity in creating a new experiment, in the same time contributing back to the general science. Together with the ethics and possibilities involved, the issue of security arises. The Bio Movement from Europe was invited to US to a conference organized by FBI, when we set up the DIY Bio Year.

@Biologigaragen
In our lab we generally have 3 types of practices: once or twice a month we organize Group Experiment Nights by inviting scientists, artists and designers to make some workshops. Then we have monthly meet-ups to organize the community activities to get slowly engaged in what we are doing, and we also document all our activities - on our blog, wiki, and social media where you can find some outlines on how to run these work-shops.

When you start doing this practice, you end up being called to do an art exhibition. They invite you to do a lab and they want you to be really active, but you end up in a lab that only looks nice, but not having much in there, because our practice is about making mess just like in a real lab. Therefore I think there is definitely a crash between the esthetics of the DIY bio with wires all over and the esthetics of a museum.

Collaboration and Open Innovation
My current research at the IT University is about merging the esthetics of the DIY bio and the practices of DIY bio.

The project is about creating a close ecosystem where you harvest energy, so the algae provide oxygen and the bacteria degrades oxygen. The picture is at the bottom of the jar and you can harvest energy from it. For the future I want to build it into a suit or a shirt, or some kind of prostheses that can be attached to your body, just to show how you can create a symbiosis between human and algae bacteria.

Going back to our lab, we have now started up collaborations with both industries and business people in order to see if we can actually make some products for the market.

Daily environmental monitoring through our garden by Wahyu Sigit Rhd

First of all, many of us are now talking about environmental issues, but we forget that the best way in learning about the environment come from and are closely related to reading the changes that are going on this planet. We chose to talk about dragonflies because they represent a very sensitive indicator for reading the changes, especially those produced in the water system. Concerning us, we think that the focus on dragonflies can bring out an easy and cheap way for reading the actual condition of the planet today.

Secondly, dragonflies are closer to our daily lives than we think. Before, our parents and we, when we were children, often encountered dragonflies around us and our environment. If we take a look now at the auditorium's surroundings, perhaps we will see almost none. From this, we can directly read how the environment close to us has changed and how the water system has evolved.
This is the principle that we use - dragonflies as an entry-point to read the changes of the planet. Unfortunately, many of the Indonesian communities don't know about the rules and benefits that can come from dragonflies. Only those working in agriculture are aware of the fact that dragonflies are great predators that can create a great balance for the microbes in the agricultural fields, because they are good animals of prey for the pest, mosquitoes and flies being also part of the dragonflies' diet that help to keep this balance in the ecosystem.

Dragonflies are also good indicators for the water system's quality. The water is the place of reproduction for dragonflies, where the nymph and larva are produced, both being extremely sensitive to pollution. If the level of pollution is high, the process of metamorphosis into becoming dragonflies cannot take place. Only the nymph of the dragonfly can be the indicator as whether the water system is good or not, therefore being a helpful tool to check the health of the water.

Dragonflies provide a lot of inspiration to us and to the art field practitioners, and we can see many examples to support this aspect in today's practices. With our own activities we try to create a movement in our society that can trigger the spirit of our art society by using dragonfly as inspiration, starting from creating batik, music and other artistic forms. As an example, some street musicians took the concept as an inspiration to create their 13 songs using this theme, afterwards being able to record an album with songs related to the beauty of dragonflies, farmers and environment.

Furthermore, in our activities we invite children to work on batik clothes, using the motif of dragonfly in order to provide a more alternative way on how to combine their hobby while learning about the ecosystem. In the alternative camp we try to bring children closer to nature and to dragonflies by using photography.

We have also created the Dragonfly Festival which included the making of songs, drawings, beats, where we invited 15 artists that realized mosaic shapes, bamboo handicrafts and miniatures of the dragonflies. With this concept, we tried to involve the community into our artistic activities.

Our special program is about inviting photographers that can learn more about the knowledge needed in photography - how to use certain skills of angle and position in order to produce a picture that shows different perspectives of the dragonflies. We use a type of photography that can help identify the species of dragonflies. These examples of photographs are used to show not just the beauty of the dragonflies, but also the detailed elements specific for identification, as a new knowledge for researches to gain.

Indonesia has around 900 species of dragonflies but because there is a lack on researchers for this field to work on Odonata, the information data is scarce. The Indonesian society has very little knowledge on the diversity of dragonflies. What we do within the Dragonfly Society is to reintroduce the missing knowledge about dragonflies and to remind the communities about its importance.

Working as the many
by Fajar Abadi, Ismal Muntaha & Tedi Nurmanto aka Tedi EN

Jatiwangi is a rural-urban area located in West Java between Bandung and Cirebon, known as the largest tile-producing factory in Southeast ASia. Jatiwangi art Factory had a great impact on the surrounding communities, involving the 16 villages that have grown up for a more developed society. Since 2008, Jatisura Village began working together with JaF community by organizing researches through workshops, art projects and the festival.

Fajar's artistic practice often involve many people without the necessity to categorize them as audience, participants, contributors, public nor viewers. The people's (bodily) movement or reaction within the kind of work he does is inevitable and always common and natural in the ways of eating, smiling, carrying things, throwing balls, etc. He challenges the existing forms of interactivity, contribution, collaboration and participation amongst us humans with a spark of fun and joy. He explores daily experiences and uses them as a method in presenting his art.

"For today we have prepared something different. We would like to present our practices and how we usually work with many people by cooking 'seblak basah' a specialty snack from Bandung. Since high school I was interested in the word 'rasa' that incorporates various meanings: taste, flavor, sense, thing, or feel. The food that we are going to cook for this presentation is a kind o meal enjoyed by the old ladies that sometimes, while they are preparing it, also gossip. The same thing we will try to do here: 'gossiping' while cooking." Fajar explained.

He continues, "In my previous project, 'Kueh Senyum' (Smiling Cake) that I have been doing for three years, I have also tried to create something like what I am doing now, only that it was a shop for cakes with kitchen and display. The idea was to make the muffins and afterward sell them, but the way in which you could buy the cakes was not with money, but with a smile. I was photographing every smile with instant camera, and I used those pictures as a replacement for the money."

Ismal (current director of Jatiwangi art Factory) tells his side of the story. "Fajar also came to Jatiwangi for Artist in Residence Festival in 2008. I also noticed that in his practice he is trying to reach many people as "orang banyak". He came to a class and he asked the students to choose the best teacher while the teacher had to choose the naughtiest student."

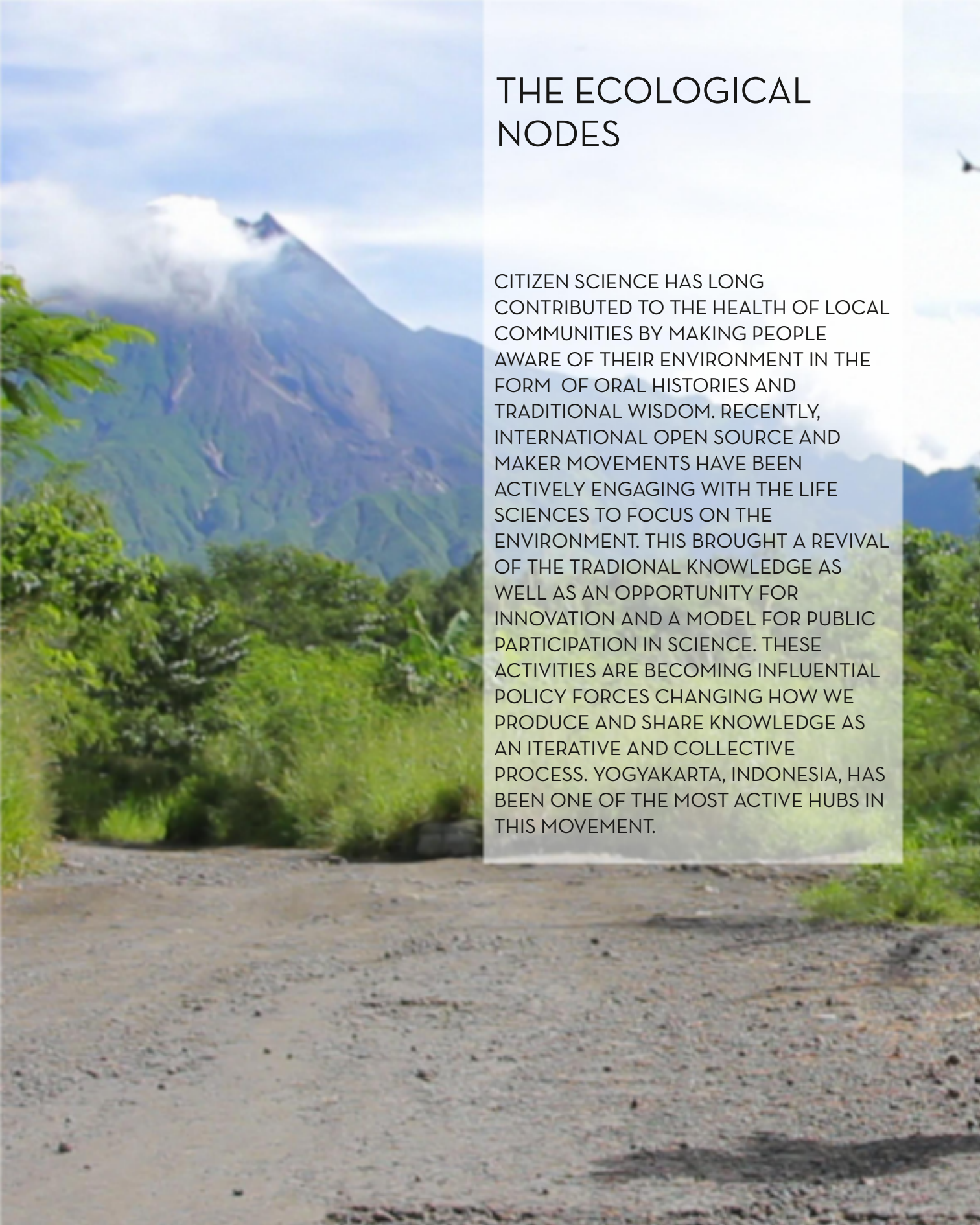
Fajar added, "The best teacher got a goblet from me and the naughtiest student gave a goblet to the best teacher. At the end I asked the children to throw with small colored balls into the winning teacher. I hope he was happy about that."

Ismal & Tedi (lead guitar in Hanyaterra, a ceramic-based instrument band from Jatiwangi art Factory) continued. "With this example you can see why we usually invite artists in our programs. Our place is not at all beautiful, it doesn't have a way that goes up, it's just a plain space with a lot of noise from the machines, dust, mosquitoes, and so on. Because we don't

feel that happy with the nature around us, we created a festival that invites artists such as Fajar and others as well to create something interesting for the community around. In Jatiwangi we also have many roof-tiles that we try to make them look aesthetically better or to give them another purpose by changing their shape or making music out of it." So, the question remains. Who are the 'many people' then, or how important are 'the many' when they are part of a project?

"Pameran di Rumah Warga" (Exhibition in People's Houses) is one of the projects in Jatiwangi art Factory that can show us the importance of the many which is considered as. By far, that project is considerd as the most interesting spectacle by local citizens. Basically, the collective invited artists from several cities in Indonesian to do an exhibition. The venue of this exhibition was at people's houses not in a gallery. So when visitors came to see the exhibition, they are given a map of people's houses with names and addresses. The artworks are displayed in those houses. Visitors had to visit the houses as guest, somehow had to interact with owner and inavoidably had to act as guests.

Generally, artists are conditioned to be part of the many, part of the existing issues, problems, currents that exist and at the same time the local citizen are conditioned actively to be part of the many. In that sense, we are all the same. That's what what Jatiwangi' art Factory encourage in each on-site projects.



THE ECOLOGICAL NODES

CITIZEN SCIENCE HAS LONG CONTRIBUTED TO THE HEALTH OF LOCAL COMMUNITIES BY MAKING PEOPLE AWARE OF THEIR ENVIRONMENT IN THE FORM OF ORAL HISTORIES AND TRADITIONAL WISDOM. RECENTLY, INTERNATIONAL OPEN SOURCE AND MAKER MOVEMENTS HAVE BEEN ACTIVELY ENGAGING WITH THE LIFE SCIENCES TO FOCUS ON THE ENVIRONMENT. THIS BROUGHT A REVIVAL OF THE TRADIONAL KNOWLEDGE AS WELL AS AN OPPORTUNITY FOR INNOVATION AND A MODEL FOR PUBLIC PARTICIPATION IN SCIENCE. THESE ACTIVITIES ARE BECOMING INFLUENTIAL POLICY FORCES CHANGING HOW WE PRODUCE AND SHARE KNOWLEDGE AS AN ITERATIVE AND COLLECTIVE PROCESS. YOGYAKARTA, INDONESIA, HAS BEEN ONE OF THE MOST ACTIVE HUBS IN THIS MOVEMENT.

Biorecovery of Volcanic Soil

There is wide-spread devastation following the 2010 eruption of Mount Merapi in Yogyakarta, Indonesia. The explosive eruption producing clouds of hot ash and other volcanic material caused a rapid drying to the soils around the volcano and covering the soil at about 50 cm thick. Later on, it creates nutrient poor volcanic surfaces. Previous research studies on the biodiversity of legume-nodulating bacteria (LNB) in three agro-ecosystem affected by Mount Merapi's eruption shows that LNB biodiversity levels were generally decreased. Therefore, an effort to restore the biodiversity of LNB for helping further plant growth in the destructed soils is needed.

Several methods could be carried out to increase the biodiversity of LNB in the destructed soil: Inoculating LNB in the soil, giving appropriate environmental condition for LNB growth (temperature, humidity, pH, and nutrient), and cultivating wide spectrum leguminous plants. Many tropical legumes can form effective nodules with a broad spectrum of rhizobial common to tropical soils were native legume are presents. Cultivating wide spectrum leguminous plants could be an effective method for improving the biodiversity of LNB in soil. The node aims to develop a research upon appropriate and feasible method to restore LNB biodiversity in the soil affected by Mount Merapi eruptions, using wide spectrum leguminous plants.

Biodiversity Conservation in Wonosadi Forest

Located in Duren and Sidorejo, Beji Village, Ngawen District, about 55 km from the city of Yogyakarta, Wonosadi Forest is one of the last natural forests in Java island. The 'heart' of the forest is a 800 meter-square plateau with four big trees that is believed to be older 500 year old. People say that there, at the center of the forest, spring flows all the time of the year. The forest is also famous for it is said to be a place that is full of secrets (in Javanese language, "wono" is forest and "sadi" is secret). From generation to generation, the unique story that is believed by the people is that a genie and other invisible inhabitants of the area (which is considered as the genie's soldiers) lives at the 'heart' of the forest and never interfere with the people living around the forest. It is also believed that these meta-creatures are required to help the people in preserving the forest.

The forest have always been protected by the local villagers and recently also by the Green Tech Community. In a way, protecting also means conserving. This node aims to document the diversity in the forest, by setting up a lab in the forest to explore the forest ecological system and research it in a nomadic style along with narratives and knowledge from people living in the area. The bold ambition of this node is to scientifically proof the local wisdom on the use of plants and its combination for better human life.

Environmental Monitoring of Yogyakarta Rivers

Jogja River Project (JRP) started as a simple initiative from a number of people who considers themselves as citizens wanting to explore their own rivers in the city. It all begun with a morning walk on the riverside areas to explore and see what's going on around. There are three main rivers that pass through the urban areas of Yogyakarta: Code River, Winanga River and Gajahwong River. From gathering documentations (images, stories, etc), JRP has done several activities that involved cleaning the riverbanks from plastic waste, vegetation mapping, taking water samples, etc. The idea on how to conduct JRP evolved as Lifepatch started collaborating with Microbiology Department (Agricultural Faculty of Gadjah mada University), Cantigi (Green Tech Community) and other communities.

This node will focus on Code River where the people living in the riverbanks raise fish in the traditional 'keramba' (cage with floating nets to rear fish) even if the river has become polluted with plastic and other wastes that made seasonal flooding as a common issue. The coliform bacteria contaminations within Code River is also high. This node aims to enhance the relationship that JRP has built with communities along the riverbanks in order to disseminate the knowledge that have been gained both by the people through their experiences and by JRP through their curiosity and findings.

JRP is also one of the curriculums offered in Biodesign For The Real World, a collaboration between (Art)Science BLR, École Polytechnique Fédérale de Lausanne (EPFL) and Lifepatch.

When different making cultures meet
by Tarlen Handayani

If we trace back through the culture of making, in the past it has in fact never been separate from daily life. All traditional knowledge (in the west and the east) of simple technologies, in theory and in application in the environment, has created lifestyles that balance the physical with the spiritual, and the environment around us. Traditional societies have knowledge and methods for establishing fair lives in keeping with the environment. To 'make' is not merely to fulfil the demands of a person to be 'productive', but more than that, 'to make' is to build an ideology and spiritual self-fulfilment whereby 'making' empowers every individual who does it. Making also creates understanding of the processes that take time, tolerance of failure, and awareness that some things cannot be obtained instantly. Attitudes like this grow capacity for protect oneself from greed.

However, modern civilisation has taken lifestyle and humanist values in a different direction. When technology and humanist civilisation moved into the modern phase, technology began to dominate, replacing human resources, giving birth to commodities and consumerism then forgetting the wisdom of living in harmony with the environment. Scientific knowledge becomes a regime of power controlled by those with capital. Scientific knowledge and technology then become merely instruments to obtain as much profit as possible from modern society's disease, known as consumerism. This situation dominates everyday life; a longing for the 'spirituality' of the making process has revitalised the spirit of 'making' and re-established the value of self-empowerment.

In the west, consumer culture and the disengagement of human relationships that have been replaced by technology have produced a sub-culture movement of people who want to return to a 'culture of making.' This movement attempts to return technology and science to their every day applications, which anyone can implement. Science that is complicated and out of reach, attempts to reacquaint itself with the 'hacker' community to share more with the broader community. Information technology and the internet become vehicles for spreading the spirit of a culture of 'making' and connecting communities with each other.

Indonesia, as the biggest target market for information and Internet is, of course, also a target for this 'culture of making' movement. As a large nation with a wealth of traditions, where traditional lifestyles can exist alongside modern lifestyles, the 'culture of making' that comes from a western spirit of modernity is primed to interact with a 'culture of making' that has long existed in the everyday life of Indonesian society. As occurred, for instance, in the HackteriaLab, in April 2014. This event attempted to introduce communities and individuals from Europe, Asia and America to each other; meeting, exchanging expertise, knowledge and perspectives on the spirit of a 'culture of making' through dialogue, workshops and personal conversation.

Although it isn't easy, efforts to build a bridge between the 'spirit of a culture of making' from the west and the east must continue.
The gap between modernity in the west and the

east, and different philosophies of making in those cultures unconsciously creates different definitions that can detract from our goal as a movement for a culture of making - the democratisation of technology, science, knowledge and its daily applications and the development of a lifestyle that is independent and sustainable. Up until now we have often taken all of this for granted, without being aware that there are simple applications for technology and knowledge, and when we master these we are empowered.

We are often even unaware of the knowledge and technology that we are already in possession of in our culture of making.

Without this awareness, we often merely follow the spirit of the culture of making, as something from the west, and annul the 'culture of making' that is tied to our own every day lives. Rather than building an independent and sustainable lifestyle, we are colonised by the definition of making itself.

In fact I feel much more fortunate, that in Indonesian traditional and modern lifestyles can live together and contribute to each other. We still have the sources of knowledge and wisdom, including the natural resources, to live a better life, like that offered by this 'culture of making' movement that is appropriate to the context of our daily existence here.

One DIY in different generations, different styles by Debrina Tedja

I don't like vegetables, but it's a different story if it's salted or pickled vegetables. The process of fermentation is capable of changing the bitter flavour of vegetables into a sour or salty flavour, and makes it possible for me to consume a bunch of vegetables in one sitting. Especially if the pickles were made by Grandma. So, every time she comes to visit, she never leaves without making a jar of pickles. She won't buy them at the market, because she's quite against that. She says they don't taste fresh enough, or the colour is too green, as if it has been mixed with colouring or preservatives, or is it really hygienic, and many other questions that essentially mean she'd rather make it herself even though it's a hassle.

One time when she was making pickles, I asked about a few things which then led to stories about DIY practices among my grandma's generation. In this generation nearly everyone has the ability to do make things needed in everyday life. Not only to make one's own food, but also equipment like teapots, pans and fire-places. She added that life in those days was not as easy as it is for today's generation, where everything is available, can be bought in shops and doesn't require any fuss in making. Buying is easier and cheaper. Unconsciously, I agreed with her statements, whilst opening an online shop on my gadget. Haha. At a glance there are more and more dollar-shops, offline and online they are mushrooming.

But, is it true that the following generations stop becoming 'makers' because they are seduced by the ease of just being a consumer, or are there producers already making things? I began to look around myself. My parents were the subject of my observation. Yes, one point for grandma's generation was that my parents are increasingly consumer oriented. One of the things in the house that they made themselves in is a big book shelf made of plywood, which is not actually their own work because they bought the material and hired a labourer to make it. Ah, but at least my mother is great at making all sorts of traditional cakes, and often taking orders from neighbours and relatives.

I kept looking about me and found a number of interesting things. One example is a becak driver, who replaced his little bell with a kind of trumpet which used air pressure to produce a louder sound. The trumpet is usually used by soccer supporters. The intention? Of course, the becak driver chose to replace his little bell because his beat was the main road near the port, sharing the road with trucks and buses. There is also one of my favourite fried rice vendors, who has made several of his own cooking implements from recycled materials, like a ladle made from a can and a wooden handle.

These brief observations point is to several conclusions; different attitudes to DIY between these two generations. For my grandma's generation, DIY was intended to fulfil their immediate needs; if they needed a pan they made one, most people grew vegetables, and pickled them to make them last. The next generation is different, DIY is still used, but for different purposes. More often it is used for

easing work, so they can make money to buy their basic needs, whether it be a pan or pickled vegetables.

So then, what about my generation? Are the practices still the same or have they changed? Is DIY still an important part of maintaining life as it was for the last two generations?

For this, my modes of observation were different, leaning more to browsing the internet. Because they say we are generation Y, who grew up alongside the development of wireless technology. So, when we type in the key words DIY all sorts of DIY tips and tricks emerge, with all variety of discussions such as making clothes without needing to sew, making cakes without an oven, through to growing vegetables vertically in limited yard space.

If I may draw a conclusion, it is that each generation has its own way of applying DIY practice, both in terms of meaning and for survival, or more than that, so as to thrive in a better life. The essence is that all this jargon around “DIY or DIE” is no longer just nonsense.

The Participants

(biographies as of 2014)

Adeline Seah is a biologist who studied in California (B.S in Genetics & Plant Biology, PhD in Developmental Genetics with C. elegans) and moved back to Singapore a few years ago. She is just finishing a short postdoc (2012-2014) on analyzing the genetic diversity of the highly endangered Southern River Terrapin in Cambodia. In 2012, she founded Biodiversity Connections happy hour in Singapore to build relationships between researchers, NGOs and government agencies involved in biodiversity research and policy. She also recently started The Pangolin Story outreach project with a friend to use public art projects to create awareness in Singapore on pangolins and the threats they face in the region from poaching for consumption and Traditional Chinese Medicine.

Adhari Donora aka Ade aka antirender is an artist, bandwidth addict, with a particular interest on DIY/DIWO culture and interdisciplinary collaboration in art, science and technology. He is one of the founders of Lifepatch.org - citizen initiative for art, science and technology, an independent community-based organization working in creative and appropriate application in the fields of art, science and technology.

Afina Dina Kamila is a Biology Faculty of Gadjah Mada University undergraduate student who is interested in limnology, concern in aquatic bioremediation, and also an active researcher in Marine Study Club. Her current research explores on the bioremediation capability of microalgae. She is interested in interdisciplinary practices and multicultural team.

Agung Firmanto aka Geger currently works for the local govenrment in tourism and cultural fields. He is also a freelance language tutor, photographer and street art lover. In 2012 he co-founded urbancult.net, an online digital visual documentation and mapping of the street art in Indonesia. He is also co-founder of Lifepatch, citizen initiative in art, science and technology in 2012 and has been working intensively in citizen science for the communities in Yogyakarta.

Agus Tri Budiarto aka Timbil is a farmer, scientist and yoga master. He graduated from University of National Development Veteran (UPN-Veteran) majoring in chemical engineering. He has been active with local community practices of Yogyakarta since 2003, focusing his activities as a citizen scientist concerning local ecology issues and biopunk movements. He is the co-creator of IB:SC, an art and scicence collaboration project on safe ethanol fermentation method with Microbiology Department UGM which receive the Transmediale awards in 2011. In 2012, he co-founded Lifepatch.org - citizen initiative for art, science and technology, an independent community-based organization working in creative and appropriate application in the fields of art, science and technology.

Ai Hasegawa uses art and design to present a solution to the challenges encountered in our daily lives. At the same time, the solution itself questions our perception of living in this world. Having studied computer graphic animation and interactive media art at IAMAS, Japan and after that moving to London, she began working as

an animator, character designer and illustrator. At the same time Ai worked as a designer for audience participatory interactive public art at Haque Design and Research. In 2012, she graduated with an MA in Interactions Design at The Royal College of Art. Recent works are "The Extreme Environment Love Hotel" series and "I wanna deliver a shark..." series.

Ajaya Maharjan is an electronics engineer from Nepal who loves making and tinkering. He works in an education company called Karkhana. He is a teacher. He currently designs and develops PBL (Project Based Learning) curriculum for middle school children in Kathmandu.

Andreas Siagian aka Ucok is an artist, engineer and Internet troll, a crossdisciplinary artist with an engineering background focusing on creative communities, alternative education, DIY/DIWO culture and interdisciplinary collaboration in art, science and technology. Since 2004, he is working in community-based initiatives to produce installations, workshops, lectures and organizing events as well as festivals in Indonesia. His collaborative actions with the local creative community developments included him as a co-founder of several initiatives such as BreakCore_LABS, a platform for experimental audiovisual performance; urbancult.net, an online street art documentation and mapping for Indonesia and Lifepatch.org - citizen initiative for art, science and technology, an independent community-based organization working in creative and appropriate application in the fields of art, science and technology.

Brian Degger is a PhD in Biotechnology (2002) and the co-founder of Makerspace, a hackerspace in the cultural quarter of Newcastle. As an artist he concentrates on scientific processes, and everyday objects that can be transformed into workshops. His recent work includes Microbe Kisses, bacterial lip-prints of 500 people taken at Newcastle Makerfaire 2013, Briolabs Grafetti Wall, Pixelache using words around resiliance. Lecturing on DIY Biology and BioArt as part of Bridging the Gaps, Exeter, participating in the 95% Migrating art academy, and commenting on the eye at the Wonder Conference, Newcastle University.

Budi Laksono aka budzlaks is a filmmaker and video-geek that believes in popular aesthetics as means and ways of communication. He is the current Creative Director of video collective and production house X-CODE films.

Budi Prakosa aka Iyok is a self-taught programmer, exploring the wide range of possibility in creative coding. He initiated a project as a VJ with the name of manticore in 2009, combining interactive programming with graphic data visualization. His background is in industrial engineering and his interests are of images and sound processing, video jockey, generative art, machine learning, algorithms, data mining, artificial intelligence and collaboration between science and art. Currently, he is working on developing urbancult.net - an online visual mapping documentation on street art, and Lifepatch.org - citizen initiative for art, science and technology,

an independent community-based organization working in creative and appropriate application in the fields of art, science and technology.

Chandra Pradithaningrum is a Biology Faculty of Gadjah Mada University undergraduate student who is interested in marine, microbiology, bioinformatics, biotechnology, drug discovery, and environmental science. She is part of the synthetic biology community in her campus called SynBio that focuses on innovations based on interdisciplinary collaborations. She is also active in a campus research club called Marine Study Club focusing in marine biodiversity and marine pharmacology.

Cindy Lin is a final year undergraduate in the National University of Singapore (NUS) student specializing in Southeast Asian Studies and a student from a multidisciplinary art-science-technology programme in NUS - NUS University Scholars Programme. She is currently residing in Yogyakarta for independent research modules, one of which focuses on the relationship between art, science and technology, as well as the particularities of hacking in Global South open-community hackerspaces. She founded Gender Collective - safe space for gender and sexual inclusivity in Singapore in 2011 and is co-editor and founder of independent critical semi-academic Southeast Asian Studies journal in 2013 - Subjectivities. She is also member of Project X - an initiative which seeks to recognise the rights of trans*sex (not exhaustive) workers in Singapore.

Debrina Tedja is the project manager of No:Work (National Observation Work) division in Waft Lab. She graduated form Airlangga University and majoring in communication studies. She believes technology is part of daily life and way of life to deal with challenges. She sees many people who deal with their limitations and manipulated technology. Through No:Work Division, Debrina and Helmi Hardian want to spread the culture of DIY, cultivate inspiration and creativity in field of science, technology and art.

Dedi Irawan aka Tendjo is the co-founder of Green Tech Community that focuses in conserving Wonosadi Forest from a variety of different persectives. He had been an intensive nature-lover ever since his undergraduate and is now mentoring within that community.

Dian KM aka Ringo graduated from photography major in Yogyakarta's famous Indonesian Institute of the Arts (ISI Yogyakarta). He now manages the production and activities of X-CODE films.

Dipeshwor is an electronics engineer from Nepal who loves making and tinkering. He's the co-founder of Karkhana, an education company that designs hands on curriculum, based on STEAM (Science, Technology, Engineering, Arts and Maths). He teaches students from grades 6 to 9 and is a believer in 'learning by doing'.

Fajar Abadi RDP's artistic practice often involve many people without the necessity to categorize them as audience, participants, contributors, public nor viewers. The people's (bodily) movement or reaction within the kind of work he does is inevitable and always common and natural in the way of eating, smiling, carrying things, throwing balls, etc. He challenges the existing forms of interactivity, contribution, collaboration and participation amongst us humans with a spark of fun and joy. He explores daily experiences and uses them as a method in presenting his art. He uses rasa* as his medium (*rasa is an Indonesian word for taste, flavor, sense).

Fehri Helta Permana aka Si Mbah co-founded Green Tech Community that focuses in conserving Wonosadi Forest from a variety of different persectives. He is a natural-born nature-lover.

Ferial Afiff is actively involved in a number of communities and organizations and her vast curiosity is embedded in her creative process. Her art is solely based on interdisciplinary knowledge, emphasizing the personal opinions in various socio-cultural issues. Ferial has been known for her performances even before she graduated from STISI-Telkom (2005). Growing up with a gymnastic background and majoring in the sculpture department for her bachelor degree grew her sensibility in (human) body as a form that speaks for itself. Her performances do not use body as a form but rather as a medium to convey her ideas. In 2012, she co-founded Lifepatch.org - citizen initiative for art, science and technology, an independent community-based organization working in creative and appropriate application in the fields of art, science and technology.

Fikri Yathir was born in Makassar, South Sulawesi. Fikri studied at the Anthropology Major, Culture Sciences Faculty, Gadjah Mada University. He recently completed an interdisciplinary research on organic production and consumption in Yogyakarta with a student from International Relation Major, Social and Political Sciences Faculty of Gadjah Mada University and another student from Ethnology Major, Faculty of Humanities, University of Freiburg, Germany. They continued their research in Freiburg, in conjunction with another local research group, with the focus subject on shared organic garden of one cooperative and its political agriculture movement as an opposition against conventional agribusiness by government. He considers both researches as his starting point of being an avid learner of environmental issues. Fikri believes that this simple thing called food has a world affecting political history and consideration long before it is served on our plates.

Fred Kuang-Yi Ku co-founded Taiwanese BioArt Community and is currently studying in MA Communications Design, Shih Chien University, and Master of Dentistry in Department of Dentistry, National Yang-Ming University. He is working as a professional dentist and artist at the same time. Has got his work exhibited in Taiwan, Hong Kong, and Singapore. His most recent series "Organic Mimicry of Prosthesis" was made with dental material which he deconstructed the function of oral prosthesis, and changed the shapes from single organs to multiple creatures' mimicry. In his works he tries to show the discrepancy of organic-inorganic ambiguity and the condition between reality and virtuality.

Gisela Swaragita is currently pursuing her master in English Literature at Sanata Dharma University. She founded a three-piece punk band where she played bass and sang called The Frankenstone in 2007 and joined a twee indie pop band called Summer in Vienna where she plays bass in 2013. She is involved in Belkastrelka's Jalan Emas performance project together with Teater Garasi and volunteered in Biennale Jogja 2013 as the assistant for co-curator Habiba Effat and artist Dina Danish (both from Egypt). Ever since then, Gisa is always interested in the art scene of Jogja. She writes for KANALTIGAPULUH webzine that focuses on local music scene and runs a monthly event in Kedai Kebun Forum called Lelagu, where local musicians play acoustic set collaborating with visual artists.

Gjino Sutic is an independent interdisciplinary researcher from Croatia. Gjino conducts research in the several fields of science, such as; all fields of biology, medicine, engineering, electronics, neurology, nanotechnology etc. with an emphasis on DIY biotechnology & bioelectronics. He designs and makes (DIY) necessary research instruments. He invented the concept of Biotweaking (improvement of living organisms or their components to exhibit and use their full potential), which fully

defines his philosophy and work. In 2012, he joined I'MM_Media Lab and he began to exhibit his scientific work to the public-inventions and innovations such as; SRCE , BOCA, MeBUMZ etc. He also leads the BIOsection – educational project, where he lectures & conducts workshops. In 2013, he founded Universal Reaseach Institute UR. He is also one of the founders of Croatian makerspace Radiona. He combines scientific work and uses artistic representation for the demystification of science and for bringing it closer to ordinary citizens.

Grace Samboh (b. Jakarta, Indonesia, 1984) is a curator, art researcher and someone who would like to think that she makes things happen. She jigs within the existing elements of the arts scene around her for she considers the claim that Indonesia is lacking art infrastructure especially the state-owned or state run as something outdated. She believes that curating is about understanding and making at the same time. In 2011, with two of her colleagues, she initiated Hyphen with which her concern is to encourage Indonesian arts and artistic research projects and publications.

Han, Tsai-Jung Carol is currently a kinesthetic Interactive programmer developing applications for performance, education and medical field. Her academic background is in life science, nano- and biophotonic, architecture and heritage preservation. At the same time, she investigates the relationship between art and science, and their relationships with society and culture. She is also one of the Taiwanese BioArt cofounder.

Helmi Hardian is an artist and scientist wannabe. He lives in Surabaya, the city known for industry and technology, as well as the centre of electronic component markets (Pasar Genteng – Roof Market). Therefore his work is influenced by and related to technology development. Together with Debrina Tedja, they focus to develop No:Work (National Observation Work) division at Waft Lab and playing their role to researching and developing material for some workshop, lecturing, and presentation.

Immanuel Sanka is a Biology Faculty of Gadjah Mada University undergraduate student who is interested in marine science and biotechnology. His current research project is bioremediation agent (diatom) for biomonitoring agent in the rivers for water conservation necessities. He is part of the synthetic biology community in his campus called SynBio that focuses on innovations based on interdisciplinary collaborations. He is also active in a campus research club called Marine Study Club focusing in marine biodiversity and marine pharmacology.

Ivan Bestari Minar Pradipta is one of the founders of Otakatik Creative Workshop, community-based open space focusing in creative works based on exploration with local materials/ingredients, either waste or non-wastematerial. Since three years ago he has experimenting with low budget recycled glass art.

Julito aka Monika is a welder technician, mechanic trainee, electronic circuit and noisexxx freak, willing to learn programing language to build robots! She started working with electronics through sound and performance, leaving behind a more melodic and instrumental phase. She is now settled down in Calafou and experiments noise and fails in Pechblenda's Lab. She recently comes from the zombie rip mutangerlab.

Klau Kinki is a comparative archeology of self-denominations: Technical contortionist, methodological amnesia, hedonistic exhibitionism and hyperlink to the void. This means failed audiovisual technician, deserter of unflexible repetitive disciplines, post-porn sexual dissident, weaver of ephemeral nets. My

academic deformations are only fossil waste of my viscera dreamscapes, as hunger, only a reaction to furious gangs of bacterias dancing as digestive tissues and fluids.

Kristi Maya Dewi Monfries is an Australian/Indonesian curator and arts manager with a specific interest in cross-disicplianry art practice. Her recent work has focused on innovative projects that connect Australian and Indonesian artists through collaborative creative development and outcomes. She has been working from Indonesia since 2009 and is based in Yogyakarta. Kristi has curated a variety of projects such as The Instrument Builders Project Stage 1 and Stage 2, TROPIS/// SUBSONICS Festival (2011); Ruang Mes56: Contemporary Photography from Indonesia at the Centre for Contemporary Photography, Melbourne, Australia, The Volcanic Winds Project 2010-2011 Australia/Indonesia; ILMU Festival; The Volcanic Winds Project with ASIALINK in Yogyakarta. Some of her other projects includes Asialink Residency Performing Arts curatorial research, Java, Indonesia; KOMPILASI: A Survey of Contemporary Indonesian Art, Australia Films/Video Experimental film and video at Kine Ruku, Bandung, Indonesia; Clubs Projects Space 'Out of the Vault' Collection 16mm films in Melbourne, Australia; Southern: A Show of 10 Australian Artists at Home Gallery in Prague, Czech Republic, Melbourne; Piece by Piece at ROOM Galerij, Rotterdam, Netherlands

LIN, Pei-Ying 林沛瑩 is a co-founder of Taiwanese BioArt Community. Pei-Ying graduated from M.A. Design Interactions, Royal College of Art, United Kingdom with a bachelor degree from Life Science, minoring in Computer Science and Humanities & Social Sciences, from National Tsing Hua University, Taiwan.

LIN, Yung-chieh 林永杰 is a photographer and animator. Particularly into micro-photography and panorama, with self-invented photography equipments. Studied at National Taiwan University and National Chung Hsing University; majored in Entomology and Animal Science. Graduated from Shih Chien University, and majored in Communications Design.

Marc Dusseiller aka dusjagr is a transdisciplinary scholar, lecturer for microtechnology and nanotechnology, cultural facilitator and artist. He works in an integral way to combine science, art and education. He performs DIY workshops in lo-fi electronics, hardware hacking, microscopy, music and robotics. He co-organized Dock18, Room for Mediacultures, DIY festival (Zürich, Switzerland), KIBLIX 2011 (Maribor, Slovenia), workshops for artists, schools and children as the former president (2008-2012) of the Swiss Mechatronic Art Society, SGMK. Currently, he is developing means to perform bio- and nanotechnology research and dissemination, Hackteria | Open Source Biological Art, in a DIY fashion in kitchens, ateliers and in developing countries.

Martin Borch aka Malthe is a Research Assistant at IT-University of Copenhagen; co-founder and chairman of biologigaragaen; chairman of Labitat Copenhagen Hackerspace; and initiator and project leader on Copenhagen Citizen Science Center. He is working on integrating the complexity and evolutionary capability of living biology, plants, bacteria and microalgae in design and architecture. He researches and plays with the possibilities of biology in interaction and experience design. Working and living based on sustainable architecture with the company GXN, Green innovation in architecture, he believes the future holds a big potential for open source business models and innovation by making natural science relevant and accessible through an user oriented design approach. He has a Master degree in Biological Engineering from DTU, specialized in bioreactor engineering and sustainable biorefinery processes. He's in

the steering comity of "Energihøjskolen" the first Danish folk high school based on natural science.

Mary Tsang is a hybrid of sorts, specializing in both Biology and Art. She spent a good time of her college career in rainforest research and self-taught hydroponics, and creates "bioart" while simultaneously grappling with the definition itself. Since graduation, she has embarked on a documentary journey to film biohackers and bioartists in the United States, analyzing the social, political, and philosophical underpinnings of social/artistic biotinkering. The next step: to examine this same topic on a GLOBAL scale.

Matin Nuhamunada is a Biology Faculty of Gadjah Mada University undergraduate student who is interested in marine science and microalgae. He recently co-founded a synthetic biology community in his campus called SynBio. Matin wants to contribute in the DIY & Low-Cost Laboratory Infrastructure in relation the algae culture.

Matthew Baker aka Dr. Matt Baker (DPhil, Oxford 2010) is a biological physicist working on molecular motors at the Victor Chang Cardiac Research Institute in Sydney. His research career has focussed on the bacterial flagellar motor which rotates the propellor that makes nearly all bacteria swim. Matt works on building high resolution microscopes and optical traps to image and exert picoNewton torques on this motor. Currently, he is using DNA nanostructures with Dr. Lawrence Lee to attempt the first artificial synthesis of the bacterial flagellar motor. Matt has a strong interest in outreach and communications work and has performed a variety of science raps in festivals throughout UK, Europe and Australia. At HackteriaLab 2014 - Yogyakarta, Matt wants to get involved with open source hardware and DIY lab equipment and learn from the ingenuity displayed in hacking webcams to see how we can apply it to other types of microscopes.

Michael Candy is an new media artist with a specific interest in mimesis, technological archetypes and the discourse that exists within these contemporary parallels. Through the deconstruction and analysis of everyday devices, Michael has developed a unique rationale of instinctive engineering, which he uses to investigate contrasts between nature and technology.

Muhammad Hidayat aka Julian Abraham aka Togar (b. 1987) is a media artist, musician, programmer, scientist-wannabe and social researcher. Words like manipulating, decomposing, degenerating and dematerializing are often used to identify his work. Connecting one thing to another, expressed in complex algorithm, gave him the experience in how art, the environment, science and technology relate to one another providing new tools to educate and engage both him and the society into a wiser, richer and more independent living being in a world of creation and annihilation. Within HackteriaLab 2014, Togar initiated Akustikologi, project that provides a collaborative platform for artists, musicians, scientists and hackers to arrange and improvise musical compositions according to each own disciplines. This project challenges the participants to not use any kinds of electronic amplifiers for collaborative compositions in order to recall our hearing sensitivity —as we are mechanosensitive beings— amidst our noise-polluted environment.

Nur Akbar Arrofatullah (b. 1987) is a researcher and scientist currently working at the Department of Biotechnology, UGM Yogyakarta, Indonesia. He is focused on the field of fermentation techniques in various systems, such as liquid and solid-state fermentation. Several of his main research interests are bioethanol fermentation from sweet sorghum juice, biofertilizer design and production, organic farming, and silage fermentation for

cattle feeds. In 2012, he co-founded Lifepatch.org - citizen initiative for art, science and technology, an independent community-based organization working in creative and appropriate application in the fields of art, science and technology. His current research project is an in vitro method for establishing mycorrhizae on elais guineensis trees.

Paula Pin is a transhackfeminist performer and interdisciplinarity researcher. Graduated in Fine Arts from Barcelona and Sao Paolo, her work ranges from abstract video to circuit bending to investigations at the frontiers of biology, cybernetics and queer science. She was awarded a grant from Vida to develop her Photosinthetik Symphony – data from sensores attached to plants and her own body that generate sound in a program created in Pure Data. In 2012 she was invited to a residency in Nuvem, a rural art centre in Brazil to develop her work, focussing especially on photosynthesis. Questioning and blurring the boundary between science fiction and fact, much of her artwork investigates a broad range of subject matter relating to natural phenomena such as bioelectricity, bioluminescence, geochemistry and the cosmos. In parallel she creates home made synthesisers, gives workshops, and investigates the practise of noise, biohacking, diagnosis low-cost and DIWO biolabs.

Pei-Wen Liu aka pei is a sound artist who have been collecting field recordings with portable recorders over years in Australia, Taiwan, Europe, southern islands of Japan, northern-west of China and east Turkey, those soundings of nature phenomenons and human activities, or an emerging moment of small talk. Slowly, Pei built a personal archive of sonic observations; with intensions or without. While most of artistic activity focus on listening and generative composition, as well, Pei co-organized series of PlayAround workshop in Taiwan, an intensely parallel and collaborative workshop of mediating the creative use of fair software and DIY practices to an audience of young students and artists of diverse backgrounds, promoting sharism. It combines the knowledge creation and open distribution of new media technologies and contemporary art practices in a socially responsible and relevant context. MFA in Digital Media, Gothenburg University, Sweden.

Pia Van Gelder is an electronic artist, curator and teacher. Pia develops performances and installations by working with media machines, both custom built heirloom technologies like the audio-video modular synthesizer, and common electronic. In her recent work she has been interested in presenting opportunities to experience AV mysticism and what she calls 'machinic affinity', as feelings of closeness to a machine. Pia also explores interdisciplinary research into theosophy, technology, science, counter-culture histories and DIY pedagogy. She has curated various festivals, art events and exhibitions and has been involved with DIY spaces for the past decade, particularly the Serial Space collective. She is the Overlord of Dorkbot Sydney, a regular meeting for people doing strange things with electricity, whilst lecturing at the College of Fine Arts, University of New South Wales, in the School of Media Art.

Robertina Sebjanic explores in her projects various media as video, sound, wetware and more broadly conceived cross media within the context of new media and contemporary art practice. She had numerous solo, group exhibitions, performances around the globe. Robertina is also a member of experimental AV group Theremidi Orchestra. In 2012, she organized Interactivos?'12 Ljubljana: Obsolete Technologies of the Future at LJUDMILA digital media lab in Ljubljana where she was between 2008 and 2012 the programme manager/ head of art and educational activities. She

was a co-organizer of the HackteriaLab 2013 - Bangalore. Since 2013 she works as a mission and programme developer at KSEVT.

Sachiko Hirosue works as a researcher at the interface of biomaterials and lymphatic physiology in the Institute of Bioengineering, School of Life Sciences, École Polytechnique Fédérale de Lausanne, Switzerland. Her interests in bio art derives from the encounter at the Subtle Technologies Festival (Toronto, Canada) , which she co-chaired from 2005-2008. HackteriaLab 2011 - Romainmôtier, Switzerland inspired her to initiate fresh collaborations with Lifepatch and (art) ScienceBLR: BIO-DESIGN for the REAL WORLD (biodesign.cc), an interdisciplinary educational collaboration focused on solving real world water problems through analysis and mapping of water quality.

Sakar Pudasaini is programmer by trade and a tinkerer by desire. A recent dissident from the world of cubicals he has started two enterprises in the last year. GalliGalli (www.GalliGalli.org) a social tech company and Karkhana (www.Karkhana.asia) a company with a mission to support the culture of experimentation. Both companies are based in Kathmandu, Nepal. Working in areas with limited career opportunities for creative technologists and limited resources for research and development shaped his two main interests, i.e. context appropriate technologies and how DIY, DIWO technology and science that can be parleyed into careers or income generating business.

Shreyasi Kar is a photographer and filmmaker engaging primarily with celluloid and alternative photography practices. Her work is interdisciplinary and explores relationships between the self, space, city, belonging and inhabitance.

Š**pela Petric** (b. 1980) is a PhD in biochemistry and has studied at Transmedia, LUCA, Brussels. As an artist she focuses on the cross-section of biological sciences, performance and art and collaborates with the Kapelica Gallery in Ljubljana. Her recent work includes Humalga: Towads the Human Spore (an art-research project with Robertina Šebjanic, 2012), Circadian Drift (an installation with Maja Smrekar, 2012), CTCAG – recognition (a lecture-performance, 2011), Cladocera (an installation, 2010).

Suparmin Ahmad is a students as well as the current intern for faculties and scientists in the Microbiology Laboratorium, Agricultural Faculty, Gadjah Mada University. He has been working closely with Prof. Irfan Dwidya Prijambada and Nur Akbar Arofatullah for the past year in their research and experimentations.

Tarlen Handayani graduated from a journalism major in the Communication Department, Bandung Islamic University and an extension course on philosophy in Parahyangan Catholic University. In 2001, she founded Tobucil & Klabs, a small bookshop or info shop and community space. One of its missions is to support the local literacy movement with aim building capacity in order to produce new thought and to evaluate them. Tobucil has built approach to implementing the literacy movement in everyday life with regular clubs like writing club, Everyday Philosophy Club, Reading Club, Knitting Club. In 2008, she got a grant from Asian Cultural Council and learned about how to develop audience and communities in museum Brooklyn Museum and taught craft in Etsy (biggest handmade community in the world based in Brooklyn, USA). She then decided to develop her personal skill as a bookbinder. In 2012, with three other friends (local artist: Keni Soeriatmadja, R.E. Hartanto and Dewi Aditya), she created aprogram called Book Play Project. Her recent essay was publish in "Craftivism The Art of Craft and Activism", edited by Betsy Greer and published by Arsenal Pulp Press, UK, 2014.

Tedi Nurmanto aka Tedi EN is a percussionist and natural-born instrument-maker who initiated Kosmik (Komunitas Musik Keramik/ Ceramic Music Community) as a part of JaF that explores other ways of music-making and instrument-building from ceramic. He nurtures the triennial Ceramic Music Festival which in their first event generated the Jatiwangi People's Declaration and also recreated the district's hymn song. His current activities are based in Jatiwangi art Factory's (JaF) whose practices since 2005 have always involved and is directly related to the citizens of Jatiwangi District, Majalengka Regency, West Java, Indonesia. The district Jatiwangi is known for its ceramic rooftile industry—as many home industries with manual/low-tech devices are. In many ways, JaF explores art as a tool to gather citizens in many different kinds of festivities to subtly evoke the common need of harmony in living together as a community.

Theodorus Christanto is a theatermaker based in Yogyakarta. For the past 10 years, has initiated and facilitated a number of acting-related intensive workshops and studios.

Urs Gaudenz is a Swiss microengineer and founder of GaudiLabs. He worked for high tech companies in the field of microsensor technology and brushless motor control. With his solid background in electronics, mechanics and software, he is working concurrently between the disciplines. After several years of experience as a consultant in innovation management, he is now engaged as a lecturer for product innovation at the Lucerne University of Applied Science and Arts. His aim is to evolve towards more balanced collaborative entities in social action, business and technology.

Wawies Wisnu Wisdantio aka 'Bob Wewet' is an architect focusing in urban planning and building design after finishing his studies and take part as planning consultant in 2007. Apart from his daily routines, Wisnu has a big interest in nature adventure and landscape photography. This interest became his main activity in working and collaborating with many communities and organizations. Several of them are his role as a chief editor and travel writer in Landscape Indonesia since 2010; a platform for outdoor travel sharing experience and visual documentation on natural landscapes in Indonesia, and as a member of Lifepatch.org - citizen initiative for art, science and technology, an independent community-based organization working in creative and appropriate application in the fields of art, science and technology.

Yashas Shetty is an artist and composer based in Bangalore, India. Since 2008, he is an artist in residence and faculty at the Srishti School of Art, Design and Technology. He helped found the Center for Experimental Media Arts at Srishti and has previously taught at design schools across India. His works look at the relationship between language, ecology and technology. He is also one of the founding members of the Hackteria project.

Yolandri Simanjuntak left her hometown in Pematangsiantar to study in Public Relations Major, Communication Science Faculty, University of Atma Jaya, Yogyakarta. She volunteered in Biennale Jogja 2011 as an assistant for the co-curator Suman Gopinath (India) and also in the artwork's installation. Yolandri is aslo an active member of PermablitzJogja, a movement of various people from different communities trying to build their own edible garden. She was the project manager of the urban-gardening workshop in Climate Art Festival 2013. With PermablitzJogja, she is working with people from Code River to make a hundred worm-towers in their land to fertilize the soil. For the Biennale Jogja 2013, she volunteered as an assistant for artist Salwa Aleryani (Yaman).


INFOS?
IDEAS??

Instructions on lab-making by Sachiko Hirosue & Urs Gaudenz

Making a Laboratory is both a spontaneous activity and a slow labor of love.

A Lab is a place to labor (not only of love), experiment, research and share - there is no labor, experiment, research orsharing without the people. A Lab is not a museum for journalists, but a place made by a person for other people Start a small Lab , put it in a box, suitcase, backpack, picnic basket and take it with you. A Mobile Lab it actually allows you to go to people, and not wait for the others to come.

We have always been biohackers.

- cheese, kimchi, tempeh
The kitchen is not a far cry from the ideal bio Lab. In traditional houses, the kitchen faces the North, so it will not spoil the food. There is a water and heat source, solid non-porous work surfaces, fridge and freezer or equivalent for long-term storage, utensils, garbage bins.

- wine, bouillon, agar
In entry-level biology, taste and eat in the lab. If you can not eat what you are cooking, it's probably too dangerous for a public lab . Many chemicals and reagents can be found in the pharmacy, garden center, hardware, pet and grocery stores . It is easier and safer. Get to know your local stores. Build a relationship with the pharmacist, not the chain-store kind. If you have to order chemicals and biological supplies, the pharmacist is your friend. If you start to order reagents yourself, start by ordering something innocuous. This will allow you to be a registered customer without raising red flags. Then graduate to ordering the harder stuff. Get two fridges: eat and not eat. Label well, with understandable words, because eating is best when shared with others, and you don't want to kill your friends who stop by.

Build it Open, Hack it and Own it!

Biology is about living things. Make a home for your living friends in the BioLab. Be prepared to take care of your new pets day and night.
Build your Lab around your pets and projects, one thing at a time.The projects will attract a community. Then let the community build the Lab, don't build a lab for the community - or you get a lot of stuff that is never used. The Lab is the people and the projects.Make the Lab environmentally friendly,using and sharing it. This will shape your Lab to evolve and evolve with your projects.

Spend some time in the local flea market. Go to your local recycling center (déchetterie). Go dumpster-diving. Get to know people who work in institutional laboratories. Visit them frequently and don't be shy to ask for some materials. Dentists, opticians/optometrists and doctors have amazing materials. Go get your teeth cleaned and a go for a check-up. Make your own lab equipment . Use a pressure cooker as an autoclave, a hard disk as a desktop centrifuge, a styrofoam box and a light bulb and make an incubator. Print your own micropipettor, or buy some from the internet . Microbiology

started with the discovery of the microscope. Make your own webcam microscope . Make your own PCR machine with an OpenPCR kit. You will become an expert in what it is that you are doing. Evolve what is out there. Second-hand equipment bought from the internet can be old, heavy, big, time consuming and not cool. Know what can be built by yourself, and when to get the equipment ,even if it's aged . Sometimes old-school is the best - easier to fix.

Make it yours - mix up the "lab aesthetic" and your every-day objects. Pick a color, paint a wall. Play with lights. But still a Lab is a place to labor, to try things out and make mistakes. Make sure it is inviting to make a big mess. Mixing wet stuff with electronics is not a crime. It's cool. As long as you use small batteries you are on the safe side. High voltage can kill elephants.And box, label, box, label, label so you can find your stuff.

Know how to throw things out. Batteries are batteries. Electronic waste is electronic waste. Blades, syringes are sharps. Glass is glass. PET is PET. If it is something that can grow forgotten in a corner of your fridge, it is regular waste. If in doubt, autoclave it.Separate materials in separate waste bins. Separate concentrated acids and bases. If you have solvents, better to ventilate. Halogenatedsolvents should be separate from other solvents. Look up material safety data sheets, and learn what not to freak out about them. Know what your local recycling center is ready to receive. Think about what you are using. Don't throw everything down the drain or in the trash. For simple experiments, washing and reusing plastic tips and petridishes makes sense. Find glass petridishes so they can be cleaned and sterilized. We are not saving the world, we just try to fix it, tweak it, hack it - we have time to do some kitchen cleaning.

Biology is about living things. Biology takes time. Biology takes iteration. Like anything else, biology takes practice. Observe your Lab pets, love them, take a look at them under the microscope. Spend a long time observing the amazing small things that inhabit our planet. The rest are just dinosaurs and their relatives.

Did we mention Biology stinks?

You are never alone.

If you don't know how to do something, just try - or ask. If you don't know whom to ask, just talk to everyone about what you plan to do - in person, online. Learn from the community. Give to the community. The network and open sharing of knowledge is our unique strength.

You will find community in local citizen science groups. You will find communities self-identified as biohackers and DIYbio-ers. The craziest and most experienced DIY biohackers are probably still under-cover. Sitting in an inconspicuous Lab, growing mushrooms, spiders, snakes, ants, exotic fish, artificial tissue...

Enjoy lab-making!
Hope to hear from you, soon!

Workshops, workshops, workshops!

THURSDAY, APRIL 17

Kaosologi
by Isrol & friends
Nano Drop
by Urs Gaudenz & Matt Baker
Bookbinding
by Isrol Triono
Balloonology
by Julian Abraham "Togar", Urs Gaudenz and Yashas Shetty

FRIDAY, APRIL 18

Yogya Natto-making
by Ai Hasegawa
PCB-Etching-ology
by Andreas Siagian and Tarlen Handayani
Wonosadi Leaves Pring
by pei & Tarlen Handayani
BreadMaking
by Agus Tri Budiarto akaTimbil
Beyond DIY Microscopy
by Dipeshwor Man Shrestha, Matt Baker, Suparmin Ahmad
biological immortality + alternative reproduction discussion + Humalga
by Robertina Sebjanic, Špela Petric, Gjino Sutic

Retreat at Bumi Pemuda Rahayu Arts Centre

SATURDAY, APRIL 19

FLOFA BOT // Flora Fauna Bot
by Helmi Hardian & Debrina Tedja

BIOSYNTHS // Building Electronic Musical Instruments with Nature
by Pia Gelder

SUNDAY, APRIL 20

Mechanical Sculpture and 3D Printing
by Michael Candy

Carnival game
by Dipeshwor Shrestha & Karkhana

Workshops, workshops, workshops!

MONDAY, APRIL 21

DIYbio Lab introduction
by Marc Dusseiller aka dusjagr & Akbar Arrofatullah

Build a Bacterial Battery - Tweaking with bioelectronics
by Martin Malthe Borch & Gjino Sutic

Cockroches & Cookies
by Fajar Abadi, Timbil & friends

WEDNESDAY, April 23

DNA Barcoding
by Adeline Seah, Gjino Sutic & Julito

Full Panorama Photography and Lens Geeking
by Yung-chieh, Budi Laksono & Mary Tsang

Bottle Hacking / Bring your own Beer
by Ivan Bestari

FULL-DAY SEXOLOGY WORKSHOP
by Paula Pin, Julito, Klau Kinki, Fred Kuang-Yi_Ku, Timbil, Cindy Lin, Tamara Pertamina

DILDOMANCY
DIY Personal LUBRIKASI (Lubricant)
IN-BETWEEN AROMATHERAPY:
Genitalia Spa Hacking


INFOS?
IDEAS?
LOST & FOUND

The river mapping by Agus Tri Budiarto aka Timbil, Budi Prakosa aka Iyok, Novel Ramadhan, Robin Scheibler, Sachiko Hirosue & Yashas Shetty

How does one map contamination in a river, or a fleeting sample, which all require some time to arrive at a result? Who will be this map for?

We started by going over the existing maps. Robin talked about the hardware and mapping of radioactivity (cumulatively, single value and geolocalized data plotted) and about the safecast project. We already had a map for JogjaRiver Project, for which Iyok from Lifepatch has previously made an interactive map based on the Ushahidi platform, geolocating the coliform counts and panoramic photos of the sample collection sites. Yashas is working with Bangalore Urban Metabolism Project (BUMP), and shared with us the challenges of massive data and the visualization of it.

We agreed that we need to step back and take the opportunity to rethink the perspective of maps: – does River data have to be on a 2D map or is the river actually 1D? We had further interesting discussions on how we "read" maps. In Yogyakarta, the North is indicated by the Merapi volcanic Mountain, and the South by the Queen of the sea, and everywhere you will usually meet people who give directions based on landmarks. We also found out that there are many on-going projects that deal with the waters and rivers in Yogyakarta organized by other NGOs and local initiatives. We learned that there are historical projects, one of them run by Romo Mangun, an architect, activist, and priest who worked with the citizens living by the river,being an active worker in the river communities and mainting the rivers clean almost all his lifetime.

Some maps that were brought into attention, like the 1854 Broad Street Cholera map by John Snow, called "spatial epidemiology", was one of the first if not the first example of map used for determining the source of the cholera epidemia. The interest of Lifepatch is to locate the sources of contamination along the river, so that the contamination source can be addressed.

During our initiative to bring narratives to the maps, another map was brought to our attention by Pei-Ying. In Documentation: the Shape of the Singapore River, Debbie Ding collected sketches made by people and what they think the shape of the Singapore River looks like, without making reference to anything else (currently showed at the Singapore Art Museum). The shape of the river reflects the memories and the individual's relationship with the river. This relationship with rivers was echoed during a late dinner conversation, when Novel, who lives near Code River told us how "The river was a friend – it was green, beautiful, we played there...but now the river is no longer like that. We try to keep distance".

Within these 2 weeks, we decided to focus on the following:

- research the list of known water/ river(mapping projects in Yogyakarta
- enrich the mapping by using narratives
- visit the waste water processing plant
- request to have data on the sewage infrastructure from the local government

- sampling as performance/ ritual
- organize/agree to build a database to accommodate the different types of data to be mapped – an open platform that would be available for other projects mentioned above

Concretely, what we experimented during this time was to try to set up and test out a new workshop looking for diatom diversity in the Code River, and the exchange of memories/ impressions of the river. From Karkhana, we have learned workshop basics and ice-breakers to get over language barriers, and with the v.1 of the digital webcam microscope, we visited X-CODE films headquarters with kind interns willing to try the fresh-out-of-the-oven workshop. Together, we visited the river and collected the water samples, and went through the process of concentrating and observing the diatoms under the microscope. Later, what Shreyasi found out by taking water from the nearby rice patty, was that while diatoms can be readily seen in the water from the rice field without any process of concentration, the river water had to be processed to see any diatoms. We also asked people to write and share their river experience. It was a long afternoon – and we were amazed how everyone was willing to stay until the end. In debriefing on the workshop, we listed what needs to be improved, and brainstormed for the 2 nd version.

The prototypes and the process were shared during the finalHLab14 exhibition, curated by Grace Samboh from Hyphen. This exhibition was conceived as a pathway for collaborations, organized by the HLab14 research nodes, the Volcano, Forest and River.

Within this exhibition related to the river node, regarding the hardware used, there was a GPS/ temperature sensing coconut made by Urs from GaudiLabs, and a zebra-fish immersed yet segregated in the water (a conceptualization of having a toxin-sensing fluorescent reporter fish in the field) exhibited as Exosynthesis. This prototype stems from the concerns of the "BIO-DESIGN for the REAL WORLD" biosensor projects, where reporter bacteria, or fish, for example, transgenic zebrafish that can sense environmental toxins, must be confined from the environment. Also, there was the Water Sampling Probe (WASP), a mock-up of a GPS-triggered water sampling raft, collaboration between members of Lifepatch and WAFT-Lab, and a member from the Taiwanese Bioart Community. MusikBatu di Kali Code (Stone Music in Code River) video, was made working with youth in Tukangan, an area along the Code River.

A major concern was "why should people go take river water samples?" - while testing the coconut in the waters, the group noticed that garbage is directly thrown into the river. The technologies used for the detection of contaminants is not the limiting factor. If awareness-building is the issue – then a water sampling robot competition can be just as effective. Even awine-making workshop requested by the community, where vessel sterilization is performed, can also raise awareness of the water source.

Hardware manufacture: From big industry to the hobbyists by Matthew Baker

Recent developments in consumer electronics, laser cutting, and 3D printing, have drastically reduced the barriers between the 'ordinary punter' and bespoke hardware manufacturing. This enables a paradigm shift in the way research is approached in high end labs worldwide, as well as revolutionising educational access across all ages, in all communities. It improves research quality, and researcher quality, in laboratories, by encouraging an open-access principle that interrogates how hardware works, and by investigating how we can tweak it, we open the era of rapid hardware development through lateral technology advance.

Typical lab and industrial research is governed first by a quest for funding. The logical process followed is typically a) find the problem you want to solve, b) work out what equipment you need to solve this problem, c) apply for money to buy the equipment you need to solve the problem. DIY hardware has the real potential to totally invert this paradigm. Led by a desire to understand hardware, demystifying it, but also genuinely creating open access to the design parameters and components, it becomes much easier to build your own bespoke hardware solution to a specific problem. So, rather than being constrained by lack of access to hundreds of thousands of dollars worth of equipment, you are only constrained by your access to basic building materials, and your imagination. This levels the global research playing field, allowing smaller countries and players to take part, but also, in countries with plenty of funding, it allows researchers to focus more heavily on fixing problems, rather than the politics of obtaining funding. It also allows a much more rapid response to technology. Rather than waiting for a big industrial player to solve your problem and build the equipment that is required for you to answer your burning research question, you can assemble the components to prototype a hardware solution, and refine it to a finalised device, before you would normally have obtained purchase authority, and at a significant saving. Fundamentally though, the benefit is not about time and money saved, it is about learning to think 'how can I, myself, solve this problem', promoting independence to build, adapt, and customise your tools to your problem, with total intellectual ownership of the equipment.

Much of the DIY hardware culture has been led by educational initiatives. It is far easier to teach how microscopy works by building microscopes with children, than through a chalk and talk discussion arround a closed, expensive, commercial microscope. As designers, we benefit from the practical ideas and improvements offered by the community at large, as well as empowering the community to take control of their environment, and the educational opportunities available to their children. There is a faster time to incorporate new ideas, from more varied elements of the global research network, such as 'the person on the street', as well as the huge benefit that is created from having more people exposed to 'hands on' science, that is, the technical skill of building equipment with your own hands, understanding a theoretical problem, designinga

solution, and physically building it, which is one of the cornerstones of experimental science, and allows access to scientific learning to those that otherwise might escape it, as well as contact with traditional educational structures through outreach and educational hardware building initiatives.

The educational benefit inside existing well funded labs is immediately apparent also. Too many medical researchers have little idea how the hardware they use on a daily basis actually works. One classic example is a nanodrop, a device for measuring protein concentrations in small droplets. This device is used routinely in all biochemistry labs, but very few people understand the process by which the concentration measurement is made (a spectral measurement). Urs Gaudenz of GaudiLabs has pioneered an Open Source alternative to the nanodrop based around easily assembled laser cut accrylic, a web cam, and a DVD fragment used as a diffraction grating. While this product is rapidly approaching the level of commercially sold equipment, the benefits are already apparent. By having access to the schematics of the GaudiLabs device, and being forced to actually understand how a nanodrop works, biochemists are forced outside their comfort zone to understand basic hardware and gain an appreciation for the limitations of the measurement. Given the increasingly interdisciplinary nature of modern research, it is not sufficient for a biochemist to 'only know about proteins', now they must know about optics, microscopy, and hardware, and there is simply no better method to understand hardware than by building it yourself.

As Urs has said with regard to this hardware, the plan is **'see one, do one, teach one'**, that is, see a piece of DIY hardware being built, build one yourself, and then teach a class on how to build one. Education of others, and yourself, is built into the fabric of DIY Hardware culture. Building equipment, by yourself, or ideally with others, is one of the most powerful ways to spread an infectious enthusiasm for scientific understanding. It empowers people across all communities to understand that they can take control of their local environment by building, at low cost, the scientific equipment they might need to explore and assess their surroundings.

But Sire, the have no clean water! Let them drink beer! by Brian Degger

One of the forgotten aspects of fermentation is that it was used for survival, not just for ceremony. Fermentation turns poisons into food and liquids, preserves edible things and makes intoxicants of plain materials, through biological transformations involving microbes (bacterias and moulds). It is a mechanism of action only discovered by Pasteur in the 1800s with its mass industrialization soon after. In the last 50 years or so, fermentation (and bread making and baking is one) has been carved away from the commons persons everyday life, outsourced if you like.

Industry loves fermentation, as it is a platform of technology that can generate multiples, standardised, and multiple products to sell. You only have to go down the yogurt aisle in a western supermarket to see that. Of course industry needs to make standardised things from standard conditions, clean water, clean material, with any 'wildness' excluded. Food hygiene standards also want to eliminate the wild. Standard operating procedures, ISO standards protect the consumer from harm, but also diversity. So, every can of beer tastes the same! Amazing, perfect, you want X you get X, but wildness that's different. Wild ferments, or even home ferments are different, more like a prayer, an offering, if all the planets align it will be good, but never the same twice.

Another important aspect is fermentation is soo free, cheaper than paint, cheaper than a pint of beer, found materials, a packet of yeast if you want, and the smallest amount of experiential information, that multiplies exponentially. Compared to other DIY-biological pursuits, it needs remarkably little equipment, and nothing specialised.

So where does art come into play? Artists love 'fields of play/enquiry' of innovation and explorations using them to problematise questions of society, the commons, access to food and clean environments and support a discourse on where our food comes from. A number of artist groups (fo.am, Lifepatch, House of Natural Fiber, Serde, Herbologies) now using fermentation, in the past created and explored net. culture. Indeed it is possible that the skills obtained in the learning of computer codes and rigor in programming processes can be directly transferred to fermentation. Fermentation is basically a recipe (protocol), ingredients (modules) and a debugging/tasting cycle. As in all biology, it takes time to start, but it always speeds up at the end and there are simple 'Hello World" quick ferments to get into the process. For me the "Hello World" was Sima, a Finnish alcoholic lemonade. I had seen it and tasted it, but until I made it I didn't realise the ease of this. You get a result in a few days, but can start sipping it straight away.

My provocation would be: Why pay for what is actually free?

When it comes to alcohol and specifically strong (distilled) alcohol, we get into interesting territory. It is illegal to make strong (distilled) alcohol in the UK, you owe excise duty on

what you are making and you must also must be licensed. In the context of Latvia, the berry aronia is used to make wine and beer. In the Indonesia, fermentation is used as a political action, to make affordable alcohol, to support communities and also as generator of music. Mild level alcohol is too expensive to be bought would be beer! With general labor income 6USD/day, a bottle of beer that costs 3,5USD is therefore unaffordable. Cheap alcohol exist, but to buy homemades from someone you don't know is also a risk to your own health. So, you see a lot of Lifepatch's workshops have been about making your own good alcohol rather that than buying bootleg.

Again—and this applies to the world: Why pay for what is actually free?

#Hlab14:JOG

Pameran seni kerja sama

Langgeng Art Foundation
Jalan Suryodiningratan 37

Pembukaan pameran
Jumat, 25 April 2014, 16.00 – 18.00 WIB
Pameran berlangsung sampai Jumat, 2 Mei 2014
Terbuka untuk umum dan gratis!

Kurator pameran
Grace Samboh

Peserta #Hlab14
Agung Firmanto aka Geger (ID); Agus Tri Budiarto aka Timbil (ID); Ai Hasegawa (JP); Ajaya Maharjan (NP); Andreas Siagian (ID); Brian Degger (UK); Budi Prakosa aka Iyok (ID); Carol Tsai Jung Han (TW); Debrina Tedjamidjaja (ID); Denisa Kera (CZ/SG); Dipeshwor Man Shrestha (NP); Fajar Abadi (ID); Ferial Afiff (ID); Fred Ku (TW); Gjino Sutic (HR); Grace Samboh (ID); Helmi Hardian (ID); Ivan Bestari Minar Pradipta (ID); Julito aka Monika (ES); Klau Kinki (ES); Kristi Maya Dewi Monfries (AU/ID); Martin Malthe Borch (DL); Marc Dusseiller (CH); Marry Tsang (US); Adhari Donora aka Antirender (ID), Matt Baker (AU); Michael Candy (AU); Julian Abraham aka Togar (ID); Nur Akbar Arrofatullah (ID); Paula Pin (ES); Pei Ying Lin (TW); Pei-Wen Liu (CH); Pia Van Gelder (AU); Robertina Sebjanic (SI); Robin Schleiber (CH); Sachiko Hirosue (JP/CH); Sakar Pudasaini (NP); Shreyasi Kar (IN) Spela Petric (SI); Suparmin Ahmad (ID); Tarlen Handayani (ID); Tedi Nurmanto (ID); Urs Gaudenz (CH); Theodorus Christanto (ID); Wawies Wisnu Wisdantio (ID); Yashas Shetty (IN)

Organizer:

Partners:

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HackteriaLab 2014 - Exhibition

Essays

Press

Find more information on the Exhibition on the wiki

HackteriaLab 2014 - Exhibition

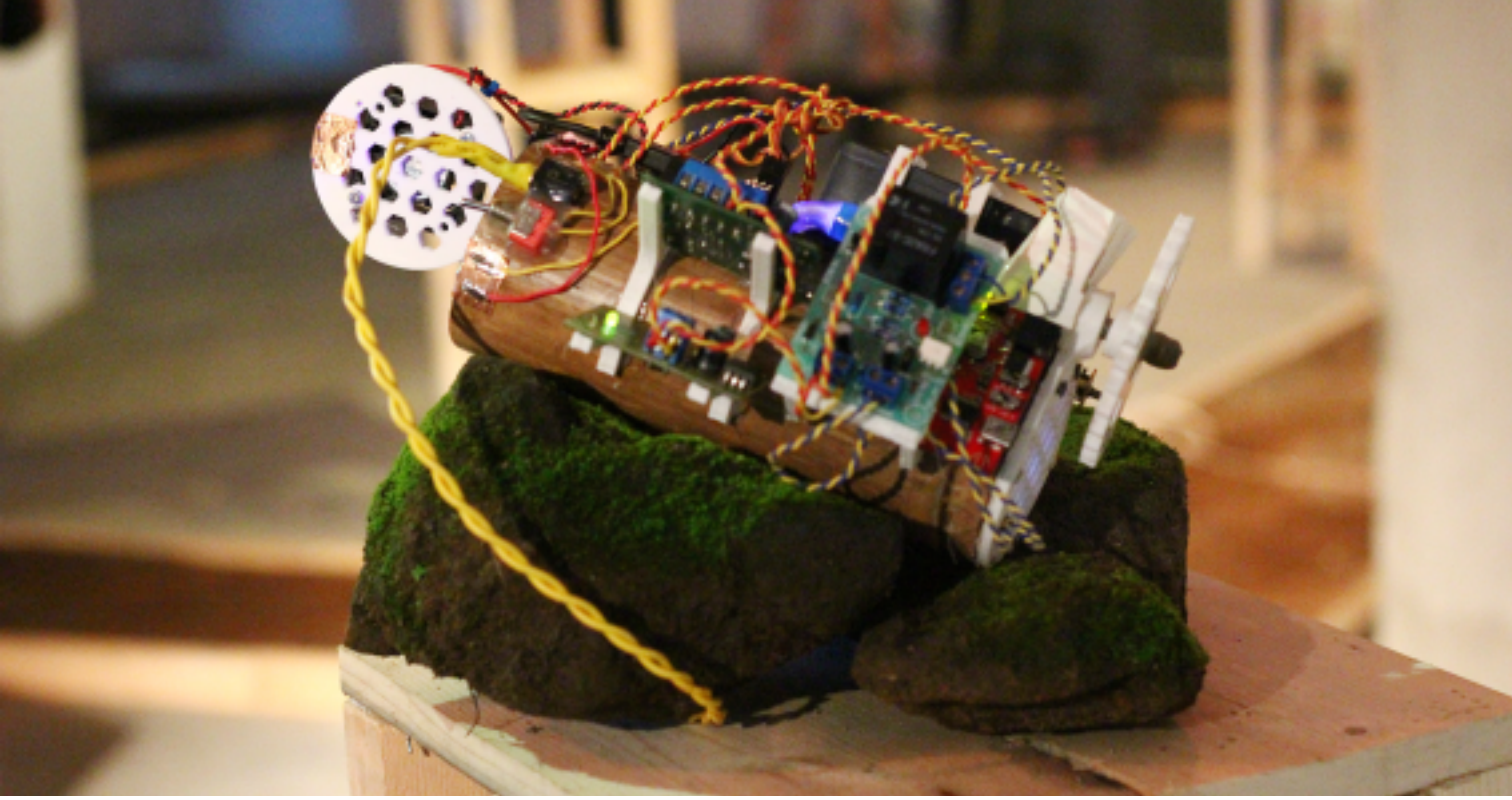
What is HackteriaLab?
A two-weeks intensive gathering of researchers, artists, scientists, academicians, hackers that is making-orinted.

What will they be making and for who?
They are free to make anything along their own disciplines and practices within the setting of three active local community projects (Mount Merapi by Microbiology Laboratory of Agricultural Faculty in Gadjah Mada University; city river's environment by Lifepatch; and Wanasadi Forrest by Green Tech). These existing projects is put on the table as cases that have been mapped out, in development and are open to multidisciplinary input from more than 40 participants of #HLab14.

What will you find in this exhibition?
Sound installations, interactive installation with living mediums, traces of collaborations with other people, ideas and prototypes. The works in this exhibition are the (temporary) results collaborative attempts comprising from individual efforts in representing talks, thoughts and discourse throughout #HLab14 along its three ecologies; collaborations between participants; and collaborations with communities surrounding the three offered ecologies.

How do you 'know' these works?
One of the starting point in appreciating art is by recognizing its making process and materials. But this exhibition does not offer explanatory texts as captions though the works are highly influenced by a variety of non-art disciplines, both by materials and in its making process. Those specifications are accessible in Lifepatch.id and Hackteria.org; or simply by following our QR codes.

Yogyakarta, April 2014
Grace Samboh, Exhibition curator



Artificial Pollinator
Electronic orchid made out of bamboo, 3D printed components, electronics, UV lights
By Michael Candy

Description: The Artificial Pollinator is an electronic device designed to attract, capture and pollinate UV sensitive insects. The device works by attracting the insects using an ultraviolet light source. Once the insect is detected the device closes and releases artificial pollen into the tube before again releasing the insect.

Further plans: The Artificial Pollinators could be further developed to assist in the documentation, cataloguing and profiling of insects in a given area.

Keywords: Insects, Bamboo, Electronics, Tracking, bioart

Human Biohacking: Experiment Y001

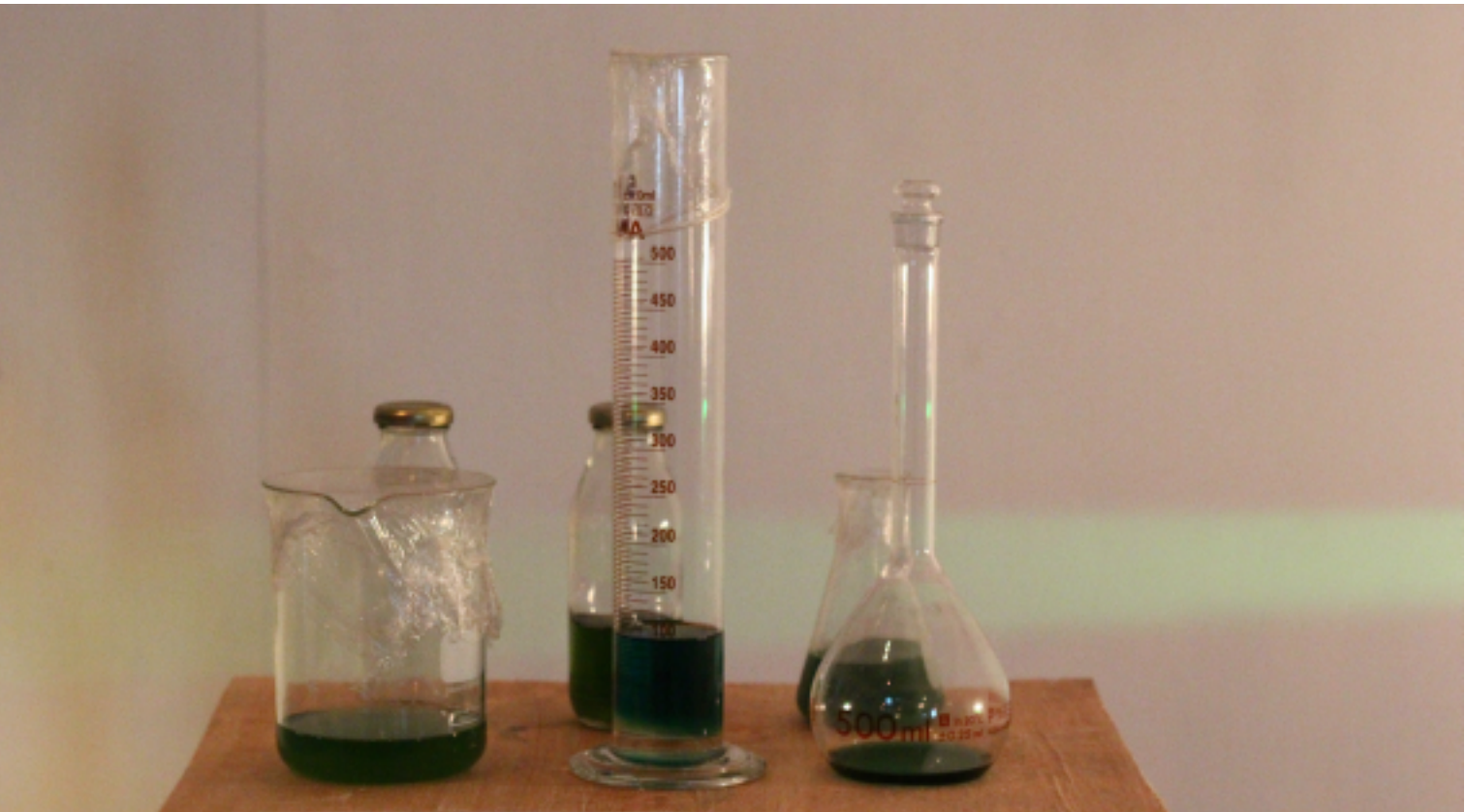
Blue human pee

By Julian Abraham aka Togar, Gjino Sutic aka Biotweaker

During the experiment, the subject (code name Togar), on own initiative & with his consent, has been subjected to testing of drug 3,7-bis(Dimethylamino)-phenothiazin-5-ium chloride and its effect on the human body. The goal of the experiment is to test the maximum dosage of the drug on the human body without experiencing serious metabolism disruption. Our medical expert (code name Biotweaker) has analysed different parameters of subject; it's urine color, sclera metachromatism and changes in subject's vitality effects of the drug on mind and body. Side-to-side with experiment's scientific value, artistic depth of urine as an indicator of human condition are explored. The experiment was inspired by Yann Marussich-Bleu Remix and also,it is an ethical response to Dr. Mengele's unethical experiments on non-Arian subjects.

Further plans: We hope to continue further research into 3,7-bis(Dimethylamino)-phenothiazin-5-ium chloride drug & it's effects on humans (with special focus on its nootropic properties), as well as further investigations in urine as a media of art expression.

Keywords: Biohacking, bioart, human body hacking



THE GUN (Read: Degan/kelapa/coconut)
A print out a small compendium with plant names, photos and description of application and use. We show various local Jamu products. Teas, extracts, etc. We prepare a looping video with a few pictures and slides of the process including jungle background sound and recordings of the interviews
By: Ferial Afiff, Martin Malthe Borch, Gjino Sutic, Adeline Seah, Green Tech

Description: Ethnobotanical research collaboration between Green tech, UR Institute, Hackteria, Biologigaragen, Lifepatch and Biodiversity connection. Conducted at Wonosadi forest, with aim to document indigenous useful plants with ethnobotanical value & to help to preserve biodiversity of Wonosadi forest. The research includes biosampling, taxonomical analysis & as well as collection of folk tales about their use.

Further plans: The project is on-going in nature; it will be continued to be research upon by Green tech in Wonosadi forest as part of their program of preserving biodiversity & supported & researched by BioStrike project @ Biologigaragen & Citizen's BioBank project @ UR Institute.

BIOstrike

A diybio/citizen science experimental competition to find new antibiotics. Installation of petridishes, plant samples, laboratory equipment and flyers.

By Sakar Pudsaini, Ajay Maharjan, Dipeshwor Man Shrestha, Adeline Seah, Gjino Šutic, Justyna Ausareny, Martin Malthe Borch

Description: Biostrike is a collaborative citizen science project aimed at discovering new potential antibiotic drugs, and at the same time be an educational tool for biotechnology. Biostrike was launched at Re-new media arts festival in Copenhagen November 2013 and there have been sessions and workshops conducted in Singapore, Israel, Berlin, Amsterdam and during the future everything festival in Manchester

The Biostrike session during Hackterialab 2014 was used to both setup and demonstrate the possibility of using local available products to conduct microbiological experiments in a normal kitchen setting. This session further integrated the local culture and the forest note ethnobotanical research, by investigating the antimicrobial activity of Jamu the local herbal medicine against the potential pathogenic microbial flora of Code river.

The experimental setup used, was developed in collaboration with, and to fit the needs of the Nepalese group Karkhana, that develops playful educational workshops. We hope that this session can allow even more people to get a successful hands-on experience with biotechnology, and potential contribute to the advancement of community based open source drug discovery.

Musik Batu di Kali Code
(Stone Music in Code River)
Stoneware musical play on a raft made of bamboo & reused plastic drums and a videoclip
By: Tedi Nurmanto, Dian KM aka Ringo, Sanggar Anak Kampung Indonesia

Description: The youth in Tukangan, an area along the Code River, plays around with these stone when they are hanging out. The stone creates music in a way. I asked them if they would be interested in making "stone music" together, they told me that they have already been discussing about exploring stone as music, so I started exploring it with them.

Further plans: Album-making, recording, record release

Watch the video online in Youtube:

Yogya Natto Making
Installation of fermented soybean in petri dish, dried rice, straw, photo
By Ai Hasegawa

Description: This project is try to make a Natto with Yogyakarta rice straw, soy beans and local bacteria. This would help to know if there is Natto making bacteria in Yogyakarta.

Natto is a traditional healthy Japanese food made from soy beans fermented with Bacillus subtilis (Known as hay bacillus or grass bacillus, is a Gram-positive, catalase-positive bacterium.)

It is popular especially as a breakfast food with hot white rice. Although, Natto smells bad, like someone's feet and slimy texture.

Let's make and eat the Yogya Natto!

Future plans: Make a better one which is tasty and safer!

Keywords: Bacteria field research, fermented food

Hurdi Gurdi Grade
Live installation comprising microscope, sensors, LCD Screens, micro controllers, DC Motor, tray and Hurdi Gurdi
By: Yashas Shetty, Wukir Suryadi, Lintang Praditya, Gisela Swaragita, Shreyasi Kar, Julian Abraham aka Togar

Description: It is a bioacoustic instrument that looks the interface between non-humans and human cultural artifacts. This work is a continuation of the akustikologi project. Akustikologi itself is a platform for artists, designer, hackers, makers, musicians, and scientists to work on acoustic technology and related issues. The exploration of sonic possibilities has always been an integral part of hackteria and hackterialab, and akustikologi is a continuation of that tradition.

Future plans: We hope that the [Akustikologi] network will extend with more collaborators and partners.

Keywords: Bio Acoustic, tardigrade, akustikologi, collaboration, interface

DILDOMANCY [micro.organism – 4 macropleasure]
Installation comprising of sound, black box, pen & paper, wax dildos, motion sensor
By: PECHBLENDA - Paula Pin, Julito, Klau Kinki, *Fred Kuang-Yi Ku, Cindy Lin, Tamara Pertamina*

Description:
Microorganism formed dildo sculptures on candle wax exhibition
Molds of dildos exhibition
Sound
Sensor Motion motors
Body live mannequins

Further plans:
Fuck off censorship together
Put electronics devices inside Dildos
Keep us in touch

EXOSYNTHESIS

Installation of three ponds

By: Ivan Bestari Minar Pradipta, Urs Gaudenz, Justyna Ausareny, Brian Degger, Sachiko Hirosue

Description: A series of ponds that have various inhabitants (collected from river and aquarium shops introduced and endemic) and instrumentation (Daphnia control and the GPS Coconut). Also provides environment for orchestra exploitation.

Electronic device in a coconut shell, reading geo positioning (GPS) data and water sensor for mapping. Has been tested in the rivers of Yogyakarta.

DIY water quality sensor based on the determination of the inhibition of the mobility of daphnia due to toxicity of chemicals and wastes. Color changing lights attact daphnia found in local waters. Microvolume Spectrophotometers to quantitate micro-volumes of water samples. Unsing workbench by Public Lab to analyse data. Device built from a webcam and a DVD-R in a public workshop during the HackteriaLab in Yogyakarta.

Further plans: Map the collected data, learn more about Daphnia “Kutu Air” cultivation and develop a point of care manufacturing workshop for the devices.

Keywords: river, water, aquatic, modification, control, daphnia, ikan, crab, workshop, point of care manufacturing, apropriate technology

Bar-Code

Live Performance

By: Pei-Ying Lin, Pei, Agus Tri Budiarto aka Timbil, Fajar Abadi, Helmi Hardian, Debrina Tedjawidjaja, Cindy Lin

Description: This experimental molecular gastronomic experience plans to put audience/ participants taste palettes and social environments though a defamiliarizing experiences. Carbonated "Jamu", a local Indonesian herbal drink, resembles beer texture; a response to the unsafe, wrongly acclaimed fermentation processes circulating in Yogyakarta. Lotek, an Indonesian salad, will also be served tapas-style. The climax arrives when the scent of Kali Code is perfumed into participants' olfactory systems - smell from boiled collected trash and river water at Kali Code. Such a visceral experience is accompanied with the streaming of the popular Indonesian song about drinking alcohol, Oplosan , a reminder of the stigmatization faced by Code residents as drunkards. This serves to discomfort participants already familiarized expanses with food and space, sensitizing participants to naturalized behavior of sitting beside Kali Code while dining. Hacking settings and contexts is what this collaboration attempts to do through gastronomic explorations and alteration of perceptions.

Further plans: To carry out more workshops with the local people at Kali Code regarding food and edible gardens as well as educate various bodies and organisations about the stigmatization of Code residents.

Keywords: Code River, molecular gastronomy, food hack

Reminiscence of Akustikologi
Installation of photography and sound
By: Budi Laksono

Description: Akustikologi is a music project that provides a collaborative platform for artists, musicians, scientists and hackers to arrange and improvise musical compositions according to each own disciplines. This project challenges the participants to not use any kinds of electronic amplifiers for a collaborative compositions in order to recall our hearing sensitivity —as we are mechanosensitive beings— amidst our noise-polluted environment.

Sound is ultimately a very physical medium: from the vibrations you can feel in front of a speaker box, to the way we generate sounds. The modern era is resplendent with noise, from car stereos, to the screech of motorbikes. Historically volume was an epic endeavour, organs took serious effort to build, and were the loudest instruments of their day, but now loudness is easily achieved, and everywhere, through cheap and ubiquitous amplification circuitry. Akoustikologi seeks to address sound as a collaboration between international scientists and artists present at HLab14 to generate music using only organic, unamplified sounds. This project uses the physicality of soundwaves to direct the audience's awareness to what sounds can be generated by a group of people and their environment.

The Philosophy of Constant Waiting, Chapter 7 Yogyakarta
Sound installation (Two pairs of speakers, cable extensions and audio players)
By: Pei

Description: Collecting field-recordings of three ecological nodes as well as from the constitution of HLab14, using those recordings as acoustic seeds to feed into a self-designed digital audio patch and composing improvisationally the soundscape, and sculpting the attributions of their spaces, situating the known to unknown.

Future plans: Reconnecting memories and imaginations for personal soundscape archive, apply to other performances and installations.

Keywords: Soundscape, acousmatic, culture, nature

Forest Mobile Workspace
Mobile lab
By: Urs Gaudenz

Panoramic photography in glassware /no photo
By: Yung-Chieh Lin

HLab14 Official Participant Cookies /no photo
By: Fajar Abadi

Searching for... Jogja River Project v.2
Installation of projected video, interactive map, microscope, books, river samples
By: Shreyasi Kar, Yashas Shetty, Dipeshwor Man Shrestha, Agus Tri Budiarto aka Timbil, Nur Akbar Arrofatulloh, Sachiko Hirosue, Ai Hasegawa, Budi Prakosa aka Iyok, Robin Scheibler, Wawis Wisnu Wisdantio, Immanuel Sanka, Tarlen Handayani, Dian KM aka Ringo, Budi Laksono, Novel Rachmad, Urs Gaudenz

Description: The Jogja River Project has documented coliform bacteria contamination of the river. This project is a continuation of Lifepatch's on-going intervention into exploring microscopic and macroscopic living beings in the river. By turning water sampling into a larger performative ritual, this project hopes to collect not just scientific data, but also create an archive of narratives, memories of the river. The map will eventually be developed into an open collaborative citizen initiative, welcoming other projects and initiatives around the river.

Further plans: This is an on-going project between Lifepatch, UGM, (art)scienceBLR, and EPFL.

Keywords: map, river, community, microscope, biodiversity, coliform bacteria, rituals, narrative

BIOSC: BIOLOGICAL ORCHESTRA EXPLOITATION PROJECT

Interactive installation comprising wood, rocks, glass, electronics, daphnia(kutu air), ants, worms, unidentified river microorganisms, raspberry pi, fish (A. albifrons black ghost fish(Amazon River), Hypostomus plecostomus(Amazon River), Gambusia affinis mosquito fish(Mississippi River), family Hemiramphidae halfbeak, catfish, crab, ...), lcd monitor, plastic, water from the river, soil, leaves, sugar, moss, acrylic, metal

By: Pia Van Gelder, Robertina Sebjanic, uncletwis, James Nicholas, Helmi Hardian, Justyna Ausareny, Debrina Tedjawidjaja, Ivan Bestari Minar Pradipta, Ajaya Maharjan, Dipeshwor Man Shrestha, Brian Degger, Marc Dusseiller, Tsai - Jung (Carol), Paula Pin, Costis Barbas, Bawep Pramara, Andreas Siagian aka Ucok

Description: BIOSC is an orchestra of biological performers. Each performer is a biological life form performing with electronics, various kinds of microphones, electronic and organic oscillators and many amplifiers. Listen to each sound separately on headphones and listen to the orchestras sound scape thru speakers. BIOSC implements bio(ana)logue systems, an organic process of coexisting living systems and analogue electronic systems.

Further plans: BIOSC is a collaboration that has emerged from HackteriaLab 2014 and some ongoing research by different members/ collaborators. This presentation illustrates the beginning of an ongoing investigation.

Keywords: Bio-sonification, natural oscillation, vibration, repressilator, analogue, biologue, bio(ana)louge

An Exchange of Words
Video installation comprising five synced Raspberry Pis; five monitors; a router; and Aninnen network
By: Pei-Ying Lin, Mary Tsang, Yung-Chieh Lin

Description: This video installation recreates a discussion between five international participants of HackteriaLab 2014. This project was inspired by the fleeting nature of conversations and the difficult task of preserving these critical discussions.

Future plans: Make it into a full length installation and complete final video that can be shared and viewed online.

Watch the discussion online in Youtube:

WASP (Water Sampling Probe)

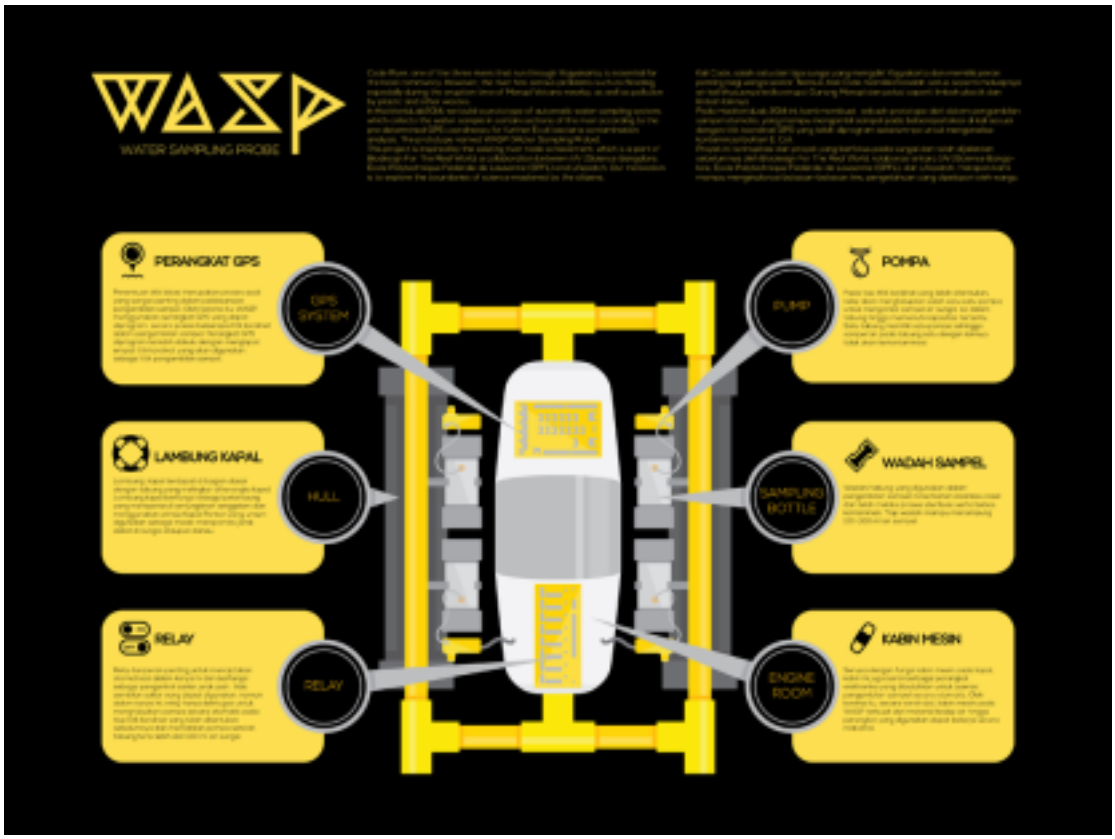
An instrument that is made out of PVC pipes and kitchen plastic utensils that contains an Automatic Sampling System for water monitoring in the River

By: Nur Akbar Arrofatulloh, Budi Prakosa aka Iyok, Andreas Siagian aka Ucok, Debrina Tedjawidjaja, Helmi Hardian, Tsai - Jung (Carol)

Description: Code River, one of the three rivers that run through Yogyakarta, is essential for the local community. However, the river has serious problems such as flooding, especially during the eruption time of Merapi Volcano nearby, as well as pollution by plastic and other wastes. This is a prototype of automatic water sampling system, which collects the water sample in certain sections of the river according to the pre determined GPS coordinates for further E.coli bacteria contamination analysis.

Further plans: We intend to explore its function more and make it as an open source artwork. Therefore people can develop equipment and also take benefit of it.

Keywords: Code River, River, Water Sampling, Automatic, Open Source



UNRAVEL: TEST TRAIL NO. 1
Abstract Paper sculpture with Living Snails
By: Meagan Streader and Cindy Lin

Description: As inspired by the concept of Wonosadi Forest, this project aims to explore the concept of unraveling. A tessellated spiralled sculpture will slowly change in form with the consumption of cellulose pulp in paper by snails. The spiral paper form will potentially unravel as snails nibbling on it change its inner crystalline-structure. Posessing a slimy biopunk philosophy, "UNRAVEL" wishes to articulate the role of nature in transforming environment, landscapes, and largely space. It also speaks about the organic compounds which we consume, the many forms it translates into and the unexpected outputs we may encounter.

Further plans: Our plans for "UNRAVEL" is to make a larger and more complex sculpture exploring the potential of hacking paper by introducing microorganism on paper sculptural forms.

Keywords: Snails, Biopunk, Biohack, Sculpture, Organic Forms, Wanasadi Forest

Akustikologi: The first edition by Julian Abraham aka Togar

Beginning with a conversation about ears, which have no self defence system, Akustikologi developed an open platform for anyone who was interested in acoustics and associated issues. In its first stage, Akustikologi was first held in conjunction with HackteriaLab 2014, as one a programs that accommodated artists, musicians, hackers, designers, scientists or whoever, local and international participants, working together to create musical compositions without electronic amplification.

Electronic amplification is something that is generally applied to a musical event, depending on the space and the instruments used. Electronic amplification also generally appears when an object is turned into a sound-making instrument. Of course for some things this is necessary. However, this account is not about electronic amplification, but more about questioning how we can enjoy music without using amplification at all. Why? Of course this is related to many things, but this event focused on noise pollution, which is on the rise everywhere recently.

Noise pollution is a change in the environment because of excessive sound. This has an impact on the quality of life of all creatures in the vicinity. Noise pollution can be caused by natural phenomena or human activity. The speed of technological development and the rise in population means noise pollution is more frequently caused by every day human activity. Indirectly, noise pollution can influence physical and psychological health, for instance by disturbing sleep, increasing stress levels, hypertension and causing loss of hearing. The last symptom is known as Noise Induced Hearing Loss (NIHL).

NIHL can occur due to damage or death of hair cells on the basilar membrane which is the basis of the sensory cells for hearing. Unlike birds and amphibians, damage or death of these hair cells is permanent in mammals, including humans. To this day, there has yet to be technology able to re-grow these hair cells. So, one of the ways to protect hearing sensitivity is by being familiar with the sounds around us, understanding their power and avoiding long exposure to loud noise.

Akustikologi intends to convey this in a tangible, visible and involving way. This was apparent during the collaborative musical composition event. During a music event, there is usually a distance between the players and the audience, determined by the space, instruments and so on. This event stressed that sound created by the environment can also be included in compositions that are played by participants in the performance without amplification from the players. This was an effort to erase boundaries, or to create equality of boundaries. Acoustic as a boundary.

At the first event, I invited several people to work together to put on a musical performance without electronic amplification. Akustikologi is not closed to the possibility of using electronic instruments such as motors, sensors, dsb, provided the sound is still produced through a process of naturally acoustic friction or percussion. For a musician,

this is quite challenging. Apart from seeking harmony through tone, tempo, alternation and movement, the process of seeking harmony is also dependent on the loudness or softness of sound from each player and the instrument they are playing.

The collaborative process began with invitations to several people we thought would be interesting to meet; locally, nationally and internationally. They gathered, met each other, and began to discuss common issues, such as technical matters, schedules, and the goals of the collaboration. After the discussion session ended, participants understood what they had to do. The experimental phase then took place at Bumi Pemuda Rahayu (BPR) where participants gathered to discuss their composition, make instruments and play music for three consecutive days.

As for making instruments, several participants used materials that came from the rivers, forests and environment around the homes near BPR. Materials such as bamboo, coconut leaves, river-stones, pieces of wood and more were found and turned into instruments such as trumpets, xylophones, didgeridoos, alpine horns and bamboo percussion. Urban (from Switzerland) spent his time changing the bamboo given to him by a local resident into an alpine horn and a didgeridoo, while Wukir invited many people in on the first day to make trumpets and whips from coconut leaves.

After several experiments in instrument making, the next session was to make a composition, beginning by listing which instruments would be used, the character of each instrument, who would play it and how, movement of people and instruments, stopping signals, entrance signals and more. After gaining a sketch of the compositions, participants began to explore their roles, and eventually the finished piece was only revealed during dress rehearsals, on the Butterfly Stage at Padepokan Seni Bagong Kussudiarjo.

The performance was quite short, remembering that there were only three compositions. It was introduced with a short explanation of a number of matters related to the flow of the program. The presentation, introductions and Q&A sessions took place after the compositions had been played. There were many interesting questions and responses from the audience, even though they were difficult to answer in relation to the environment and our every-day attitudes to that issue. The participants were also satisfied with the results at the conclusion of a very short session, which had made collaboration difficult. For this we express our thanks to the participants who gave their time, ideas and spirit in the running of this project.

Soundscape

Indirectly, the collaborative pieces that participants in Akustikologi produced were related to environmental issues. In the first composition, for example, colleagues from the Code River banks were led by Tedi Nurmanto in attempting to bring the audience into the

atmosphere of their everyday lives by the river, using materials from that environment as musical instruments, played subtly to give the impression of a soundscape. So too the final composition, which began with the need for words associated with chemical compounds. Rully Shabara asked Yashas Shetty to write down chemical compounds that are pollutants in our lives, which were then shouted out loud along with the composition.

Hurdi Gurdi Grade

Collaboration with Akustikologi continued with the construction of an installation that was included in the HackteriaLab 2014 collaborative exhibition at Langgeng Art Foundation. The idea was to make an installation that linked to art and science, Acousticology and Hackteria, humans and microorganisms, utilising what we already have, with technical expertise, and something that could be made in a short time, because there was only a day or two until the showcase opened. After that the concept was assembled by the existing technicians, and the collaboration produced the "Hurdi Gurdi Grade."

It is a bioacoustic instrument that looks the interface between non-humans and human cultural artifacts. This work is a continuation of the akustikologi project. Akustikologi itself is a platform for artists, designer, hackers, makers, musicians, and scientists to work on acoustic technology and related issues. The exploration of sonic possibilities has always been an integral part of hackteria and hackterialab, and akustikologi is a continuation of that tradition.

"Hurdi Gurdi Grade" joins the words "Hurdi Gurdi" and "Tardigrade." Hurdi Gurdi is the name of an instrument made by Wukir Suryadi; a tardigrade is a kind of small creature that is often found in water eco-systems. Although it used the name Tardigrade, when the installation was displayed it didn't use any tardigrade at all. Instead, it used daphnia, or water louse. The use of tardigrade was merely symbolic, because these small animals were very familiar to Hackteria and its network.

Hurdi Gurdi Grade spoke about the merging of art and science, the connections between humans and microbial creatures, by joining two different DIY instruments with their own individual functions. The Hurdi Gurdi is a DIY musical instrument which was brought together with a webcam microscope, which is a DIY scientific instrument. They communicate with each other by opening up interactions between humans and micro-organisms. Technically, the webcam microscope captures pictures of a group of daphnia in a container, the moving picture appears on a small screen, then a light sensor is placed above the screen to measure the daphnia's movements. This data is translated through a micro-controller, and the micro-controller directs a motor to rotate the musical instrument. The rotation speed depends on the activity of the movement of the daphnia. This rotating musical instrument only provided friction as a tempo, and the person playing selected the harmony.

This interactive installation has no clear function if it has to be returned to the world of art or science, because in principle, both already stand alone as instruments, and each has its own function. However, systematically, there is a possibility that it would work if applied somewhere that requires a slightly exotic, or even magical water purity sensor. If the instrument was moved to an ecosystem where the status of the water cleanliness was questionable or required continuous monitoring, this instrument would more or less fulfil this role, because daphnia are creatures often used as bio-indicators. This then has enormous possibilities for further application.

Thinking about sound and acoustics

As Phatt Matt (Matthew Baker) puts it, "Sound is ultimately a very physical medium: from the vibrations you can feel in front of a speaker box, to the way we generate sounds. The modern era is resplendent with noise, from car stereos, to the screech of motorbikes. Historically volume was an epic endeavour, organs took serious effort to build, and were the loudest instruments of their day, but now loudness is easily achieved, and everywhere, through cheap and ubiquitous amplification circuitry."

"The speed of sound is 340 metres per second, which is faster than most humans are able to travel in their lifetime, but, as a result of this fact, most frequencies audible by humans have wavelengths around the human length scale. For example, a 30 Hz bass frequency has a wavelength of 11 metres, a concert pitch 440 Hz has a wavelength of just under a metre. Thus the physical lengths of the sounds around us are innately linked to our size. Were we the size of elephants, or alternatively rabbits, we would no doubt hear things differently, and create different music for ourselves. Akustikologi explores the dependence on human biology, both to create it and to hear it, that underlies music."

Exchange of words - an experiment of mining out what was in the air by Pei-Ying Lin, Yung-Chieh Lin & Mary Tsang

Project Overview
The Art-Science Forum, or more appropriately, An Exchange of Words, is a five-monitor video installation presenting a "conversation" that took place amongst five organizers and participants of HackteriaLab 2014 in Yogyakarta, Indonesia. The five speakers of the project were Marc Dusseiller (a Swiss artist-engineer and co-founder of Hackteria: Open Source Biological Art), Spela Petric (a Slovenian artist classically trained in Biochemistry), Andreas Siagian (an artist, civil engineer, and cofounder of LifePatch: citizen initiatives in art, science, and technology based in Yogyakarta), Pei-Wen (a Taiwanese sound-artist based in Switzerland), and finally Grace Samboh (a Yogyakarta-based curator who runs community art-space Hyphen, and also the location where the project took place). The project was initiated by Pei-Ying, a Taiwanese-based artist hailing from a collective called TWBioArt, where two more members were recruited: Lin Yung-chieh, a skilled photographer and artist also from TWBioArt, and Mary Tsang, an artist-biologist and documentarian of biohacking and bioart practices.

An Exchange of Words was an attempt to capture and record a collective discussion in its temporal and spatial uniqueness. It began with Pei-Ying's experience holding casual forum discussions in the TW BioArt community, where people across different disciplines joined together to find a common ground in the murky grey area between different professions and domains. However, such types of discussions are fleeting in nature and almost impossible to recreate. An Exchange of Words was a staged experiment, and HackteriaLab14 was the perfect platform to conduct it.

The Context
The motivation for recording this abstract level of interaction originated from the dynamic events of HackteriaLab14, where ideas and collaborations coalesced so spontaneously. HackteriaLab14 itself was a unique occurrence where over forty-five international participants from varying fields gathered for a two-week event that it was not meant to create a firm structure, but rather focus on organic happenings. The themes that HackteriaLab14 focused on included art-science, collaboration, hacking, citizen science, and community all compiled into a contemporary, interdisciplinary, and at the same time obscure format. It was obscure in the sense that such a 'field' addressed by HackteriaLab14 was neither established nor precisely defined, being the critical element that made it so flexible and open-minded. As a result of this huge confluence of artists, scientists, and engineers were the critical, creative, and impactful projects. In between the projects, such as the byproducts in a chemical reaction, there were lively discussions where people's ideas, interests, and philosophies intersected. An Exchange of Words was an attempt to stage and capture one of these byproducts.

How can this be manifested?
First of all, a discussion consists of 1) the language of the discussion, 2) the individuals of the discussion, 3) physical interactions, 4) tension and flow of emotions, 5) interchange of

ideas and the progression of an idea. Unlike the interview format where the answer presupposes the question, in a discussion all the participants exchange ideas, influencing each other in real time, and re-shaping the understanding of the world through each individual's mind as a dynamic process. It is a collaborative form of exploring and redefining something new.

On the night when Pei-Ying and Mary set out to formulate the questions, they surprisingly discovered that they were coming from very different perspectives. Pei-Ying viewed the five participants as "characters in a play" all joining together for a kind of experiment. She also wanted to focus the discussion on solely art-science-based questions, as: "How are artists and scientists similar or different?" "Why do artists go into science and why do scientists go into art?"

On the other hand, Mary was more wary about expecting a deep debate about the intersection of art and science, and wanted to be more realistic about the context of the project. After all, the participants were situated in this wild, unpredictable environment of hacking and collaborating, located in this foreign city of Yogyakarta, also called as the "Berlin of Southeast Asia." More so, this edition of HackteriaLab had a very strong emphasis on local community engagement, and challenged the participants to break out of the "Hackteria bubble." Mary wanted to frame the questions around this context and discuss how the intersection of art and science could help facilitate (or not?) this process of reaching "the public."

The Execution

Pei-Ying, Yung-chieh, and Mary arrived at the Hyphen house three hours prior to the "experiment", erasing memory cards, hooking up sound equipment, and carefully positioning five cameras on their tripods. The five participants later arrived sweaty, hungry, and agitated. "Does anyone have a lighter!" "I want to smoke!" "Can someone make me coffee!" Each participant then sat in one of five chairs that formed a circle, positioning themselves in front of a camera and wearing lavaliere microphones to record a separate track of audio. Yung-chieh held the sixth camera, capturing wide shots of the discussion. The moderators were recorded only through audio, addressing questions that were incisive enough to stir conflicts between the "characters," and thus mining out the underlying cruciality of ideas.

The discussion began with basic questions like, "who are you?" "why are you here at HackteriaLab?" Without even mentioning the notion of "community," the participants were already engaging in that very topic. Grace mentioned her goal as a curator to communicate artworks to the public; Andreas talked about his shift from being a civil engineer to working with communities; etc. It seemed clear by the time the "art-science" questions were asked that the context of community work framed every person's answers, and the participants were no longer interested in having a theory-based debate on what art-science means.

For example, Marc found it difficult to answer the question of "what is the difference between

an artist and scientist," saying that it forces the assumption that all individuals under the label "artist" are all the same, and vice versa with scientists. The question disregards the inherent variability of individuals within each group, and confines them in a kind of black box. It seemed like an interesting comparison to make, on the relationship between "the specialized" and "the cross-disciplinary." Pei disagrees with the notion of specialization, referencing the post-Industrial era where "people were unnaturally fitted like a screw." The participants also agreed that if certain societal pressures into becoming an expert in your filed didn't exist, then more people would have explored the grey area between disciplines. This practice that HackteriaLab represents, it no doubt "hacks the system" and erases the labels that segregate "artists," "scientists," etc.

On discussing the role of labels in society, each participant contributed with their unique perspective based on their countries' cultural values, as well as personal experiences. Marc noted about the proliferation of the art-science field in Europe, disappointed that it has become "an institution in itself." Slovenian artist Spela, who has a long history in academia, explained that labels are necessary for communicating in more conservative environments, and that people naturally crave structure. Yogyakarta-based curator Grace, on the other hand, explained that the purpose of labels for Indonesians is to communicate with foreigners, and that local infrastructure is lacking too much to create a defined culture of expertise. Andreas, member of Yogyakarta's LifePatch also added the tendency for Indonesians to lose interest in what they formally studied in school, and that the open nonjudgmental culture of Yogyakarta makes labels quite unnecessary for everyday communication. This same culture is also the reason why Yogyakarta was an ideal environment for HackteriaLab14.

The workshops between participants and those addressed to the general public were undoubtedly a greatpart of the two-week interdisciplinary event. They were a way of encouraging somewhat specialized people to engage in a subject which is not their own, and of course, reaching to proclaim "we are proud amateurs!" By engaging in another discipline, you automatically choose to become the novice and beginner. Pei added that the "horizontal mode of learning" during workshops diminished the role of an expert and created a more inclusive and inviting atmosphere for learning new skills. This is especially true in Indonesia, as Andreas explained, where a country in transition is in strong need of new forms of open learning and engagement. The workshops held during HackteriaLab and regularly by LifePatch represent alternative forms of education that challenge (or rebel against) the preexisting models.

Of the participants, Spela perhaps summarized the whole discussion in the most concise way. She explained that choosing to be interdisciplinary is a form resistance to society, and that in the practices represented by

HackteriaLab, “rather than democratizing, we are also culturalizing science.”

A Reflection

Looking back, the session of An Exchange of Words was a performance itself. While each of the participants were invited into the forum ascontributors, they were, at the same time, the test subject. Humans are hard to play with. One cannot see a session as solely one session, but the extension of the moment before, and the moment after. People bring their moods and tempers to the space, and the environment, sounds, voices, and filming equipment, all influence the happening of such an event. Despite already knowing each other very well, the participants were nervous due to the installation of lavaliere microphones and the presence of cameras in a direct physical encounter. There were a few moments when the discussion stirred up, but very likely due to the presence of cameras, the participants hesitated to speak up or over each other.

The irony of this project is that its inspiration was to “capture” a conversation in its organic, unique moment in time. Yet, the Art-Science Forum was entirely staged, questions formulated to achieve a certain range of answers and cameras positioned to resemble an imaginary round-table. As a result, the final product evolved to look nothing like its inspirational origin. In fact, it was totally fine that “art-science” wasn’t the primarily focus of the discussion like we had originally set out to do — this only reinforces the inherent nature of a multi-person conversation as an unpredictable, untamable process. Probably, if we were to ask the participants totally irrelevant questions like “what is your favorite food,” they still would have found a way to return back to the subject of community involvement and HackteriaLab14. The context and environment of HackteriaLab14 was too dominating. It’s also no surprise that the participants were rather unified in their discussion of Art and Science, that there shouldn’t be a clear border between the two, but rather allow playfulness and tinkering to connect both together.

An Exchange of Words was an experiment of the unknown, just like any other HackteriaLab14 projects and workshops that had taken place. But, unlike the other HackteriaLab14 projects that were focused on the hacking and making, An Exchange of Words was more focused on concepts, and played within the realm of ideas, philosophies, and personal experiences. The most important part of this experiment is that the participants dedicated their time for the discussion, and allowed for full recordings that later displayed in the installation. The audience is able to get a glimpse of what was happening during this very short but intense event. An Exchange of Words was a very different trajectory towards exploring the possibilities of Art and Science, and acted as a window into the participants’ minds that otherwise wouldn’t be revealed or asked for.

The democratization of knowledge and curiosity through gotong-royong art by Grace Samboh

Seni kerja sama—or, literally, the art of working together. That is the title I gave to the exhibition held at the end of HackteriaLab 2014 – Yogyakarta. The initial reason for this had been simple. First of all, this it was not an exhibition especially dedicated for media art—much less new media—which is how people often take such practices to be. The review on the exhibition, by the curator Hendro Wiyanto on the weekly news magazine of Tempo also takes a similar path: It is the practice of media art in collaboration with other disciplines. [1]

Second, I'm invariably annoyed by the term 'collaboration', which is often affixed at, or used to refer to, the current art practices done by more than one person—especially ones involving other disciplines than art, or involving non-art people who are often referred to with the generic term of 'the public'.
Now I am forced to explain my made-up term of kerja sama to avoid adding to the confusion regarding the misuse of terms that are often adopted without any further thought about their equivalent in the Indonesian language and in the practices of art in this country. [2]

I suspect, however, that there is no way for us to correctly translate '*seni kerja sama*'. Or, if there is a way to do it, it would be accompanied with quite a bit of explanation.

Almost six months after the exhibition, I was asked to present again parts of it in the form of an exhibition under the theme of activism, collectivism. Writing this essay has forced me to revisit the idea of '*seni kerja sama*' or 'the art of working together'. I was reminded of a part of President Soekarno's speech rousing the Indonesian people to develop the country and the nation: "Gotong-royong is a communal labour, a shared toil, a common struggle to help one another. The common contribution for the common good, the sweat of all for the happiness of all." [3]

Terminologies
There are some terms that are often used in the realm of art to discuss about art-related activities involving more than one person. In 1996, curator Nicolas Bourriaud introduced a term for artistic practices that use as their points of departure the relations between humans and their social contexts; i.e. relational aesthetic. Bourriaud lays the emphasis on the artist's point of departure. Bourriaud argues that the issue of the relations between humans and their social context can take place theoretically (only as a philosophical basis) or as the practices of art itself (as the steps or structure applied in the realisation of the work). [4] He first introduced this term in his curatorial essay for the exhibition with Carsten Höller, Dominique Gonzalez-Foerster, Jorge Pardo, Liam Gillick, Maurizio Cattelan, Miltos Manetas, Philippe Parreno, Pierre Huyghe, Rirkrit Tiravanija and Vanessa Beecroft.

One of the most prominent terms within the contemporary political awareness—one which helps construct the characters of new generations in a range of disciplines, from art, software development, to social and political activism—has been: Collaboration. Artistic

work done by more than one person is called collaboration. Artistic work done alongside people from other disciplines is called collaboration. Artistic work done alongside non-art people (or those whom we often call 'the public', 'the community', etcetera) is called collaboration. Within the context of contemporary art and visual culture from the year 2000 onward, the academician Irit Rogoff has helped construct the discourse of collaboration. [5] She elaborates on the different efforts involving other people (or other disciplines) by comparing them with cooperation. [6] Rogoff perceives collaborative efforts as being quite organic in nature. They rely on ideas, the problems at hand and the work itself, not on who is doing what.

Let us now return to the issue of terminology. Lately, one often refers to the term of 'participatory art' in discussions about art activities involving other people. In an article published in *Artforum* (2006) the art historian Claire Bishop initiated the discourse about such activities. [7] She begins her article by quoting the artist Dan Graham "All artists are alike. They dream of doing something that's more social, more collaborative, and more real than art." Bishop thinks that people today are often more concerned about how a work is done rather than what the result is. She constructs the argument about participatory art using social changes as its basis, which she believes often put artists in a tight corner with the issue of ethics in the context of the exploitation of subject matters. In her book, *Artificial Hells* (2012), Bishop elaborates on the issue of participatory art, starting from the needs of the state or the capital for the involvement of the "public" in artistic practices. (We can, on another occasion, have a debate on who the "public" is—that is why I'm using the quotation marks.) The needs of the state is implemented through the disbursement of funds for the activities of (what they consider as) public art, in which the level of public involvement is measurable.

In Indonesian, "*kerja sama*"—which literally means "working together"—is quite a neutral term as it is not used in the general context of art. The issue of translation, however, then becomes quite problematic. In English, "*kerja sama*" can be translated either as "collaboration" or "cooperation". The latter is closely related with the realm of economics; the first, with the realm of art in general. The choice of using "collaboration" for this term gives rise to a problem when we consider Rogoff's explanation: "collaboration for the sake of collaboration" [8] I am not trying to prove that this is a wrong premise; only, in the practices of life—and of art—that I see around me, in this country, this is virtually impossible. To be able to explain it in simple terms, I quote the words of the senior composer and clarinettist Suka Hardjana, "If we talk about the relationship between art and the public, whether it is art within the public or art for the public, we are confused precisely when we study art using the Western perspective. This is not to say that the West is wrong; rather, our approach has perhaps been inherently different. [...] Our mistake is that we are just mimicking, wanting to construct something that one calls 'ars nova' or 'art',

making art that is separate from its context. By this I mean that the art that is separated from the public, from rituals, from social intercourse. We become alienated. That kind of art does not actually exist here. Art here is invariably related with the social context, religious context, or any kind of context." Phenomenologically, then, the context is the public. It is therefore not an independent art." [9]

I chose to write "*kerja sama* art"–the art of working together"–as the subtitle for the exhibition of HackteriaLab 2014 because it is more appropriate, more suitable considering how the work had been executed. However, as I write this essay and think about how to translate it, I change my mind. I think "collaboration" is the direct and appropriate translation for "*kerja sama*". It is true that the term "*kerja sama*" is free from the values inherent in the term of collaboration, whether as a method or objective. Therefore, it is actually useless to adopt the term "collaboration"—but this is for another discussion. "*Gotong-royong*" becomes an interesting and logical term for me to use to replace the term of "kerja sama" that I have previously used—especially considering the cultural meaning inherent in the term, as elaborated by the Indonesian expert and anthropologist Clifford Geertz: "An enormous inventory of highly specific and often quite intricate institutions for effecting the cooperation in work, politics, and personal relations alike, vaguely gathered under culturally charged and fairly well indefinable value-images—rukun ('mutual adjustment'), gotong-royong ('joint bearing of burdens'), tolong-menolong ('reciprocal assistance')—governs social interaction with a force as sovereign as it is subdued." [10]

Gotong-royong art

Gotong-royong art is not a genre. It is a method, an approach, or even a series of processes that do not need to end immediately. It has no single objective, less tangible and measurable ones. Gotong-royong art can be executed using any kind of medium and has at least three criteria. First, the emphasis on the idea rather than the roles of those who are involved. Say, for example, residents in a neighbourhood decide that they need a better road. They set a target to finish fixing the road in a month. Rather than hiring men to install paving blocks, they decide to chip in to procure the materials and to do the work as a part of the neighbourhood watch. After calculating and considering the resources they have, the residents agree on installing a set minimum of paving blocks per day.

What about the residents who are unable to take part in the neighbourhood-watch round? What about the residents who have no inkling whatsoever about construction work and materials? There will invariably be a way out. Those who cannot take part in the neighbourhood watch would, say, contribute a larger amount of funds. Those who are used to dealing with construction work would serve as supervisors in the mixing, processing and distribution of the materials. Those who do not have a clue about construction work would take the role of the workers installing the paving blocks. Those who cannot do manual work would prepare food and beverage for the workers, et cetera. The emphasis here is on the construction of a better road in the area, and not the roles taken to bring about the idea. **Second, the tendency for a gotong-royong effort to have an organic structure (it is not important who leads; all roles are important).** Can we not appoint as the initiator or the motivator the one who first introduced the issue of the need for a better road? Yes, of course we can. Unlike debates of high-brow art, however, the ownership of the idea is a non-issue in gotong-royong art, as the idea is essentially derived from a common need.

Art, in the Indonesian society, invariably begins from social needs—starting from the art of sculpting for making temple reliefs, on to the

art of singing done to recite praises or stories in wayang. It is essentially difficult, therefore, to apply the perspective of formalism as the point of departure, or even as a general tendency in the practices of art Indonesia. Formalism can be used to measure the (artistic and) intrinsicquality of an art work, but it cannot be used to measure the extrinsic value of the work. The extrinsic quality is always immediately related to the function of the art work in the society. What is thus the use of an art work?

Since the advent of the idea of 'art for arts', many have said that an art work no longer has a function in the structure of the society. It is free from didactics, morality and practical functions. Art, therefore, is considered as serving no other functions than for the development of art itself. This does not mean that art work has no use because use is not the same as function. Something can function but has no use; something that is of use, however, will certainly function. This is the **third point** of that which I consider gotong-royong art. ***Gotong-royong* art is invariably useful for all involved parties** as it starts off from a common idea, a common need.

In the HackteriaLab 2014 exhibition, all displayed objects had been made using the method of gotong-royong art. Some of those could, and needed to, be called art objects; others, not necessarily so. The makers deliberately performed the method of gotong-royong art although the term was yet to exist. You will be able to read about the story of each work on the Hackteria wiki page. [11] For this essay, we shall thus refer to another example.

Consider the case of Jatiwangi art Factory (JaF). Yes, they have had a long journey. But let us for a moment consider the case of Jatiwangi march and pledge, taken during the Ceramics Music Festival 2012 alongside the Rampak 1001 Perkusi Genteng (or the Orchestra of 1001 Roof Tile Percussions). More than 3,000 residents of Jatiwangi Subdistrict were involved in the event—the 1,000-odd orchestra players, those who attended the event and took the pledge, and those who had prepared themselves and learned to sing the march. The procession involved the head of the subdistrict, the head of the village, and the head of the Jatiwangi Police Department, all representing the local government. Today, are there those among us who talk about the march, the different short-film versions of the march, the content of the oath or even the musical composition played in the orchestra? No. [12]

It is clear that the idea was the most important thing in that JaF's event. The emphasis given in the execution of the march and pledge has been how the people become united to develop themselves and their environment, using their culture as the basis. Are these those among us who have ever discussed who first proposed the idea for the march and the oath? Even if there is any, would that discussion be in any way relevant to the reality that the residents of Jatiwangi have taken ownership of the march and pledge? Whoever came up with the idea of writing the march and the pledge, and of their official launching, is no longer important. What were the roles played by JaF and the head of the subdistrict? Who supervised whom? None of these serve as an important topic of discussion in its own context. Leaders are not the important issue here; neither are they something to be debated about. It was the common needs that lead the work in the preparation and execution of the Ceramics Music Festival 2012, making sure that the work immediately became of use for all those who were involved.

Curiosity as a need

Almost all of the terms I have used above immediately refer to the tension between ethics and aesthetics in the way of Jacques Rancière. For this essay, I feel the need to use as my point of departure *The Ignorant Schoolmaster:*

Five Lessons in Intellectual Emancipation (1987, translated into English in 1991). This has served as an inspirational manuscript for a variety of alternative educational methods developed to this day. Rancière's premise is (deceptively) simple: In today's education, the hierarchical pattern of teacher-student must be questioned because democracy is about equality. What is equality-based education? Is it one in which the different roles of teacher and learner no longer exist? The reality might not be as simple as it sounds. What can actually take place is perhaps the education that is based on the needs of the learner, in which the teacher acquires the role of a learning buddy. Teachers become the key source for knowledge extension; this does not mean that they must be in ownership of the knowledge.

The general need is for a change in the attitude toward experience, knowledge and scholarship. Such art travails involving many people have the same needs. Changing the way people learn, how people experience things; changing the condition in which knowledge is perceived as an expensive thing that can only be acquired in certain places or through the legitimacy of certain institutions; nurturing curiosity and eventually making experience-based knowledge the ownership of whoever that wants it. One should give an extra emphasis on the last phrase of the previous sentence: Whoever that wants it. There is a tendency that when we talk of the "democratisation" of something, it is as if everyone has the same needs for that thing. It is not like that at all. Experience-based knowledge and all debates about changes have no use whatsoever for those who have no needs for them.

The general needs would be the democratisation of curiosity. The starting point would be the condition in which experience and knowledge are a shared ownership, owned by all. It is true that scholarship institutionalises certain experiences and knowledge; curiosity and needs for experience and knowledge, however, are the rights for all, owned by all. They are not owned by a certain scholarly institution. All who is willing to do so, therefore, can have it and will have the chance to find out and even test out the scholarship itself. Again: all who is willing to do so.

What is the position of art in this constellation? Art is the travail and scholarship that is based on experience and the sharing of experience [13]

The method of *gotong-royong* art is taken using the needs of such curiosity as its starting point. *Gotong-royong* art is not a way to create a certain form, although there are always possibilities of the presence of objects or any physical manifestations out of such travails. *Gotong-royong* art has the objective to create an ideal condition in which knowledge and curiosity become shared ownership and of use to all involved and to their original scholarly institutions.

Footnotes

1 Hendro Wiyanto, "Kelindan Seni dan Sains Terapan" in the weekly Tempo magazine, 11 May 2014. It can also be read on http://lifepatch.org Kelindan_Seni_ dan_Sains_Terapan

2 I am not a linguistic expert—it is just that I think a number of words (and especially terms) that have been adopted into Indonesian often lead artistic practices in the country to the abyss of exoticism, or to contexts that are thoroughly different from the artistic practices of their countries of origin.

3 Badan Persiapan Umum Pelaksanaan Kemerdekaan Indonesia (The Committee for the Preparatory Work for Indonesian Independence, 1 June 1945

4 "[relational aesthetic is] a set of artistic practices which take as their theoretical and practical point of departure the whole of human relations and their social context." — Nicolas Borriaud in

the catalogue of "Traffic", an exhibition at the CAPC Musée d'Art Contemporain de Bordeaux, 1996.

5 During the period of 2006-2013, www.collabarts.org often discussed the discourse of 'collaboration'. Irit Rogoff's essay on the site, "Production Lines: Conversations on Collaborative Arts Practice", serves as a main reference of sorts in talks about art done in collaboration with a lot of people.

6 "In contrast to co-operation, collaboration is driven by complex realities rather than romantic notions of common grounds or commonality. It is an ambivalent process constituted by a set of paradoxical relationships between co-producers who affect one another. Collaboration entails rhizomatic structures where knowledge is not arranged around a centre, but grows exuberantly and proliferates in unforeseeable ways. In contrast to co-operation, which always implies an organic model and a transcendent function, collaboration is a strictly immanent and wild praxis. [...] In the last instance collaborations are driven by the desire to create difference and refuse the absolutistic power of organization. Collaboration entails overcoming scarcity and inequality and struggling for the freedom to produce. It carries an immense social potential, as it is a form of realization and experience of the unlimited creativity of a multiplicity of all productive practices." — Irit Rogoff and Florian Schneider, "Production Anticipation". Excerpted from Held, David, and Henrietta L. Moore, eds. Cultural Politics in a Global Age: Uncertainty, Solidarity and Innovation. Oxford: Oneworld, 2008.

7 Claire Bishop, "The Social Turn: Collaboration and Its Discontents". Taken from Artforum, February 2006, p. 178–83.

8 "Every collaborative activity begins and ends thin the framework of the collaboration. It has no external goal and cannot be decreed; it is strict intransitivity, it takes place, so to speak, for its own sake." — Florian Schneider, "Collaboration" paper for the Summit: Non-aligned initiatives in education culture (Berlin: May 24-28 2007). Available at http://summit.kein.org/node/190 (accessed September 20, 2014, 5.46pm, GMT+7).

9 ST Sunardi; A. Supratiknya; and Ardian Prabava. SUKA HARDJANA: Manusia Anomali Tanpa Kompromi. Yogyakarta, Indonesia: Penerbit Universitas Sanata Dharma, 2014, pp. 31-35 (Seni dan Masyarakat).

10 Clifford Geertz, "Local Knowledge: Fact and Law in Comparative Perspective," in Geertz Local Knowledge: Further Essays in Interpretive Anthropology, NY: Basic Books. 1983, p. 167-234.

11 The stories can be read on http://hackteria.org/wiki/HLab14-Exhibition as well as in the book #Hlab14 (2014)

12 The preparation can be viewed here youtu.be/w-zn1CAdPAQ, the orchestra itself is documented here youtu.be/jA5TAUj_-9c, and here youtu.be/rB5ZRkWqoGk is a video uploaded by one of the participants in the CMF 2012 opening ceremony. The declaration of JATIWANGI PLEDGE read by the people of Jatiwangi lead by the Jatiwangi Sub-District Chief, Police Chief of Jatiwangi District, and Jatisura Village Chief can be viewed here youtu.be/RPuCOKI6Tyg and the English translation of the pledge is available here id.wikipedia.org/wiki/Jatiwangi,_Majalengka. The Indonesian version of the JATIWANGI HYMN can be viewed here youtu.be/ BJdFmOUwfD4, and the English version of the hymn is available here youtu.be/EfGQ7MlthzU.

13 "Producing unites the act of manufacturing with the act of bringing to light, the act of defining a new relationship between making and seeing. Art anticipates work because it carries out its principle: the transformation of sensible matter into the community's self-presentation. The texts written by the young Marx that confer upon work the status of the generic essence of mankind were only possible on the basis of German Idealism's aesthetic programme, i.e. art as the transformation of thought into the sensory experience of the community." —Jacques Rancière, DISSENSUS: On Politics and Aesthetics (Ed. & trans. by Steven Corcoran). 2010: Continuum International Publishing Group, New York, USA, p. 44.

[1]

Kelindan Seni dan Sains Terapan

Para seniman Yogya berkolaborasi dengan sejumlah peneliti berbasis laboratorium menghasilkan karya tak lazim

SUASANA Galeri 2, Langgeng Art Foundation (LAF), Jalan Suryodiningratan 37, Yogyakarta, petang itu sudah mirip kapal pecah. Ember plastik, meja bambu, botol dan tabung-tabung ramping, sampai akuarium berbaur dengan juluran kabel, layar televisi LCD, dan laptop di mana-mana. Di lantai, ada silang-silang jalur yang meruapkan bau tanah, menghubungkan penonton dengan centang-perenang obyek dan pelaku eksperimen. Sejumlah peserta pameran sibuk mengutak-atik karya. Inilah pameran "#HLab 14 (Hackteria Lab 2014)", proyek kerja sama antara para peretas, ilmuwan, peneliti, dan seniman, yang berlangsung sejak 25 April sampai 2 Mei ini.

Pameran ini hasil boyongan dari sejumlah riset dan lokakarya yang diadakan sebelumnya (13-25 April) di berbagai tempat di Yogya yang diselenggarakan komunitas Lifepatch (Yogyakarta) dan International Hackteria Society. Lebih dari 40 peserta dari berbagai negara memanfaatkan proyek pemetaan lingkungan yang dikerjakan sejumlah komunitas dan lembaga. Reklamasi tanah pertanian pasca-letusan Gunung Merapi (2010) dilakukan oleh Laboratorium Mikrobiologi Fakultas Pertanian Universitas Gadjah Mada, pengawasan sungai dan kandungan bakteri *E. coli* oleh komunitas Lifepatch (Yogyakarta), serta upaya pelestarian keberagaman hayati di Hutan Wonosadi oleh kelompok Green Tech. Apa yang kita temukan di pameran ini?

Sejumlah peserta lintas negara mempraktekkan *biological orchestra exploitation project* (BIOSC). Kita mengenal istilah ini, misalnya, sebagai institusi riset lintas disiplin yang mengembangkan bioekonomi berkelanjutan (*bioeconomy science centre*). Kerjanya memproduksi biomassa berbasis tumbuhan dengan memperhitungkan keberagaman hayati serta kelestarian sumber lingkungan air dan tanah. Tapi, sejauh yang tampak di ruang pameran, BIOSC adalah karya artistik bebunyian.

Para pesertanya mengamati bebatuan di pinggiran Kali Code. Mereka mengikis

FOTO-FOTO: HENDRO WIYANTO

[2]

1. ***Biological orchestra exploitation project*** **(BIOSC).**

2. "DILDOMANCY, micro-organism macro-pleasure".

3. Sekoci dengan perangkat GPS.

jamur bersel tunggal yang membentuk dinding dan menutup pori-pori batu. Itulah organisme kecil yang selama ini menyumbang kekeruhan pada air sungai. Nah, di pameran ini, kita dapat mengamati apa yang terjadi dengan jamur yang memisahkan diri dari diatom-diatom ini di dalam botol setelah contoh air terkonsentrasi. Di layar video, kita menyaksikan "orkestrasi" bebunyian yang dilakukan warga dengan bebatuan yang sudah bersih dari jamur.

Di tengah ruangan, ada jalinan berwarna kuning dan abu-abu mirip perahu sekoci. Ini adalah semacam pompa penyedot air yang dilengkapi perangkat sistem navigasi satelit (GPS). Dengan alat ini, pengambilan dan pengamatan sampel air sungai yang tercemar dapat dilakukan dengan lebih presisi. Alat canggih ini dilengkapi *relay* untuk menghidupkan pompa pada titik-titik koordinat di area sungai yang sudah dipetakan.

Kita menjumpai kelindan antara proses pengamatan yang terus berkembang dan

[3]

hasil akhir yang masih perlu pengujian. Dengan kata lain, kelindan antara seni dan dunia hayati adalah ambang yang terus-menerus melakukan pelintasan. Pengamatan mikroskopis pada makhluk-makhluk di luar radar pengamatan artistik yang lazim ini disebut oleh Grace Samboh, kurator pameran, sebagai disiplin "non-seni". Dia menulis, "Proyek #HLab 14 adalah sejumlah instalasi bunyi, instalasi interaktif yang menggunakan makhluk hidup sebagai medium, jejak peristiwa kerja sama dengan banyak orang, gagasan, dan purwarupa."

Ada lagi proyek "Yogya Natto", yang mencari bakteri *natto* dari tanaman beras lokal. *Natto* adalah makanan tradisional yang sehat berbahan kacang kedelai yang dikenal di Jepang. Sang seniman berupaya mencari kesamaan antara tempat asalnya di Jepang dan lokasi baru yang dikunjungi di sekitar Yogya melalui penelitian mikroorganisme.

Sebuah poster mencolok terpacak di dinding: "DILDOMANCY, micro-organism macro-pleasure". Ada sejumlah benda berbentuk batangan berbahan silikon warna-warni dipajang di atas meja. Ini adalah proyek pembuatan alat bantu seksual yang memanfaatkan bahan-bahan lokal. Hasilnya adalah *personal lubricant* berbasis air dan tepung dengan kadar keasaman (pH) nol. Pelumas kenikmatan personal ini lebih sehat untuk kulit dibanding yang berbahan plastik.

Percobaan lain menyasar kulit kayu pohon-pohon di Hutan Wonosadi, yang memiliki sari etanol antimikroba. Zat ini ternyata lebih tangguh dibanding antibiotik yang selama ini dikenal. Pekerjaan ini mengingatkan upaya "demokratisasi energi" yang pernah dipresentasikan komunitas HONF (Yogyakarta) di LAF, dua tahun lalu. HONF memprovokasi kita untuk memanfaatkan sumber energi etanol—berbasis alkohol—dari bahan jerami melalui proses peragian. Tiap 25 ton jerami akan memproduksi 1.500 liter etanol dengan kadar 98 persen atau 2.000 liter berkadar 70 persen. Adapun limbah etanol masih berguna untuk pakan ikan dan ternak serta buat pupuk.

Wacana eksperimen para seniman berbasis sains terapan—bersama penduduk setempat—semacam ini kerap disebut sebagai sains-warga, yakni sains yang bisa diinisiasi dan dipraktekkan warga didukung teknologi tepat guna dan modal swadaya. Semangat itu menjalar dari wacana seni DIY (*do it yourself*), DIWO (*do it with others*), serta sumber-sumber terbuka, bersandar pada eksperimentasi lintas jalur dan sikap mandiri.

Proyek-proyek seni seperti ini kiranya menunjukkan satu hal: perkembangan riset artistik pada ranah visual yang makin melintas ke berbagai bidang. Kritikus Allan Kaprow pernah menyebutnya sebagai seni yang memiliki kemiripan dengan kehidupan itu sendiri (*"lifelike" art*). Pada ranah ini, kata Kaprow, seni tidak lagi berdiskusi dengan seni yang lain, tapi dengan kehidupan luas itu sendiri, termasuk makhluk-makhluk kecil di bawah radar pengamatan biasa.

● HENDRO WIYANTO, PENGAMAT SENI RUPA

Intertwining Arts and Applied Science by Hendro Wiyanto (english translation)

Yogya artists collaborated with a number of laboratory-based research to producing unusual works.

ATMOSPHERE Gallery 2, Lasting Art Foundation (LAF), Ja - lan Suryodiningratan 37, Yogyakarta, the evening circumstances appears to be nearly a wrecking vessel. Plastic buckets, bamboo tables, bottles and thin tubes, not to mention aquarium mingled with overhung cables, LCD television screens, and laptops everywhere. There were intertwining paths containing smell soil on the floor, connecting the audience with messy objects and experimenters. A number of exhibitors was busy fiddling with the work. This is the exhibition " # HLab 14 (Hackteria Lab 2014) ", a cooperative project between the hackers, scientists, researchers , and artists , which lasted from April 25 to May 2.

The exhibition followed a number of research and workshops held earlier (April 13 to 25) in various places organized by Lifepatch (Yogyakarta) and the International Society Hackteria. More than 40 participants from various countries utilized environmental mapping projects conducted by a number of communities and institutions. A land reclamation of post-eruption Mount Merapi (2010) conducted by the Laboratory of Microbiology, Faculty of Agriculture, Gadjah Mada University, river monitoring and content of the bacteria E. coli by Lifepatch community (Yogyakarta), as well as biodiversity conservation efforts in Forest Green Tech Wonosadi by the group. What we found in this exhibition?

A number of participants across the country practicing biological exploitation orchestra project (BIOSC). We are familiar with this term, for example, as an interdisciplinary research institution that develops sustainable bioekonomi (bioeconomy science center). They worked on the production of biomass-based plants by considering the biological diversity and environmental sustainability of water and soil. But, as far as appeared in the exhibition hall, BIOSC suggested artistic works of sounds.

The participants observed the rocks on the banks of Code river. They eroded a single -celled fungus that forms the walls and cover the rock pores. It is those tiny organisms that have contributed to the turbidity of the river water. Well, in this exhibition, we can observe what is happening with the fungus that broke away from the diatoms in the bottle after water sampling is concentrated. On the screen, we watched the "orchestration" sounds were made citizens by the rocks that have been strained from fungus. In the middle of the room, there was a tangle of yellow and gray like a boat lifeboat. It was a sort of sump pumps are equipped with a satellite navigation system device (GPS). With this tool, making observations and polluted river water samples can be undertaken with more precision. This powerful tool is equipped relay to turn the pump on the coordinate points in the area of the river that have been mapped.

We found a intertwining between ongoing observations process and the final results that requires testing. In other words, the intertwining between art and the world is a biological threshold which constantly overlaps. Microscopic observations on the creatures outside the artistic radar observation is commonly called by Grace Samboh, curator of the exhibition, as a discipline of " non-art ". She wrote, "# HLab 14 project is a sound installation, interactive installation that uses living organisms as a medium, trace of events in which a lot of people, ideas, and prototypes worked together."

There was another project "Yogya Natto", which sought for natto bacteria from the local rice crop. Natto is a traditional food made from healthy soybeans, known in Japan. The artist sought to find similarities between the place of origin in Japan and visited the new location around Yogya through the study of microorganisms.

A striking poster was hung on the wall: " DILDOMANCY, micro-organisms macro-pleasure" . There were a number of rod-shaped objects made from colorful silicone displayed on the table. It was a project of making sexual tool that utilized local ingredients. The result was a water based personal lubricant and flour with the acidity (pH) of zero. Lubricants personal enjoyment was healthier for the skin than plastic.

Another experiment exposed the bark of the trees in the forest Wonosadi, which have antimicrobial ethanol extract. This substance proved to be more resilient than the anti - biotic is known. The work was a reminiscent of efforts "democratization of energy " ever presented by HONF community (Yogyakarta) in LAF, two years ago. HONF provoked us to harness the ethanol energy source- alcohol based-made from hay straw material through the process of fermentation. Every 25 tons of hay will produce 1,500 liters of ethanol with a concentration 98 percent or 70 percent yield 2,000 liters. The ethanol waste was still useful for fish and animal feed as well as for fertilizer.

The discourse of applied science-based artists experiment- along with- locals of this kind are often referred to as a science-citizens, the science that can be initiated and practiced by citizens supported by appropriate technology and independent resource. The spirit that radiates from the discourse of DIY (do it yourself) , DIWO (do it with others), as well as open sources, relying on interdisciplinary experimentation and independent attitude.

Such art projects would indicate one thing: artistic research developments in the visual realm increasingly passed to various fields. Critic Allan Kaprow once referred to it as an art that has similarities with life itself ("Lifelike " art). In this realm, Kaprow said, art is no longer in discussion with other arts, but with vast life itself, including small creatures under the radar of ordinary observation.

Seni Gotong Royong*
Documentary Film on #HLab14 - Yogyakarta

Citizen science has long contributed to the health of local communities by making people aware of their environment in the form of oral histories and traditional wisdom. Recently, the effort to democratize science created opportunities for innovation and a model for public participation in science. These movements rippled into many things such as a kind of revival of traditional knowledge, influential policy forces, changes in how we produce and share knowledge into an iterative and collective process. Yogyakarta, Indonesia, has been one of the most active hubs in this movement.

HackteriaLab 2014 – Yogyakarta is a two-weeks making-oriented gathering of researchers, artists, scientists, academicians, hackers and whatevers in Yogyakarta. It was hosted by LIFEPATCH - citizen initiative in art, science and technology and co-organized together with HACKTERIA | Open Source Biological Art in collaboration with various regional partners. As a web and community platform, Hackteria tries to encourage scientists, hackers and artists to collaborate and combine their expertise, write critical and theoretical reflections, share simple instructions to work with life science technologies and cooperate on the organization of workshops, festival and meetings.

Produced and directed by X-Code films, this documentary was made during the two weeks of HackteriaLab 2014 – Yogyakarta. It offers you a glimpse of (almost) everything that happens and documents the participants wish list for future collaborations and works.

Producer: X-CODE films
Duration: 52 Minutes

Watch online --->
youtu.be/kS6qmB98PCI

What will they be making and for who?
Anything along their own practices within the setting of the three ecological nodes which basically are on going projects that are open for people's participation. They are: Biorecovery of volcanic soil that is run by the Microbiology Department (Agricultural Faculty of Gadjah Mada University); biodiversity conservation in Wonosadi Forest that is run by the Green Tech Community; and environmental monitoring of the rivers in Yogyakarta that is run by Lifepatch.

(*) Gotong-royong is an Indonesian philosophy on getting things done collectively. As Indonesianist anthropologist Clifford Geertz puts it, "An enormous inventory of highly specific and often quite intricate institutions for effecting the cooperation in work, politics, and personal relations alike, vaguely gathered under culturally charged and fairly well indefinable value-images--rukun ("mutual adjustment"), gotong royong ("joint bearing of burdens"), tolong-menolong ("reciprocal assistance")--governs social interaction with a force as sovereign as it is subdued."

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See the documentation on Hackteria wiki

Online version of this book on archive.org

HackteriaLab 2014
YOGYAKARTA

LIFEPATCH
HACKTERIA.ORG
Open Source Biological Art

2022

Citizen science has long contributed to the health of local communities by making people aware of their environment in the form of oral histories and traditional wisdom. Recently, international open source and maker movements have been actively engaging with the life sciences to focus on the environment. This brought a revival of the tradional knowledge as well as an opportunity for innovation and a model for public participation in science. These activities are becoming influential policy forces changing how we produce and share knowledge as an iterative and collective process. Yogyakarta, Indonesia, has been one of the most active hubs in this movement.

HackteriaLab 2014 – Yogyakarta was held in April 2014 as a two-weeks making-oriented gathering of researchers, artists, scientists, academicians, hackers and whatevers in Yogyakarta. It expanded on ideas and methodologies about BioArt, DIY biology, DIWO (Do-It-With-Others), appropriate technology, art and science, and biohacking, developed during the previous versions of HLab10 - Dock18, HLab11 - Romainmotier both in Switzerland and HLab13 - Bangalore, India. HLab14 was hosted by LIFEPATCH - citizen initiative in art, science and technology and co-organized together with HACKTERIA | Open Source Biological Art in collaboration with various regional partners.

This book tried to assemble a collection of essays written by the participants, asked to reflect on their own experiences, individually or collectively, which only gives a glimpse into all the projects and exchanges that happend during HLab14. With a short overview of the programme and activities, selected photo impressions and the exhibition manual the book is rounded up and can be an entry point to explore further our online resources and serve as an inspiration for transdisciplinary collaborative practices.

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